# BRITISH BURMA.

EXTRACT FROM THE PROCEEDINGS OF THE

## CHIEF COMMISSIONER

IN THE

## HOME DEPARTMENT

No. 241.

# Public Health & Births & Deaths 1867-68.

RANGOON:—PRINTED AT THE "RANGOON TIMES" PRESS"—BY JAS. GOMES—1868.

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MEMORANDUM

ON THE

# PUBLIC HEALTH REPORT,

FOR

# 1867.

BY

## Colonel ALBERT FYTCHE,

*Chief Commissioner of British Burma,*
*Agent to His Excellency the Viceroy and Gov. Genl.*

1. The Report, which consists of two parts, I. Public Health and II. Births and Deaths. was written by Dr. Cowie, the Sanitary Commissioner, who was the Civil Surgeon and Health Officer of Rangoon during the year for which the Report is framed. Though, as Doctor Cowie points out in the forwarding letter, he has been unable to visit every station, and judge for himself, yet the advantage of having all the Reports of the Civil Surgeons on these subjects reviewed by one officer and by an officer of experience in these matters is manifestly shewn in his remarks.

## PUBLIC HEALTH.

2. This Town has been gradually but steadily improved for the last 20 years. At first Convict labour was employed, and the results of such employment are described by Colonel Sir A. P. Phayre, late Chief Commissioner, who was himself sometime stationed at Akyab, in his Review of the Gaol Report for 1864 :—

AKYAB.
Pages.... .... .... 21, 84.

"The Chief Commissioner has known the station of Akyab for more than twenty years. When he first knew it, the lives of Europeans were exceedingly precarious there; so were the lives of natives of India. The Chief Commissioner firmly believes that the trade could not have been developed as it has been while this state of things lasted. By means of convict labour alone, the station has become tolerably healthy.

3. With the introduction of intra-mural labour in the various Gaols of the Province this means of improving the Sanitary state of this amongst other stations has decreased. It is manifestly wrong that any large town, or indeed any town, should be allowed to depend on Prison labour. But the *gradual* loss even of this kind of labour will of course at first be felt, and be loudly and deeply deplored by those interested solely in the Town, or wedded to old prejudices and customs; yet the introduction of the use of free labour is a necessity of constantly augmenting weight, and the extent to which, for municipal purposes, such labour supercedes that of convicts, may be taken as a pretty safe guide in estimating the comparative advance in Civilization made by different Towns. Though in Akyab wages are high, it is doubtful whether it would not, in the end, be more economical to employ well supervised free labour even there.

4. The work done during the year under review has been great and good; that is, not solely of a beautifying nature, but also such as will help towards improving the health of the inhabitants. As noted by the Sanitary Commissioner it is to be hoped that no trees, or at any rate, very few have been cut down.

5. The decrease in cases of Cholera is satisfactory. Here, as in all seaports, the greatest care should be taken regarding Syphilis. As Akyab is not a military station it has not been possible to introduce the Rules now (since the close of the year under review) enforced at Rangoon,

but something might be done towards preventing the spread of this terrible disease.

6. The Civil Surgeon, in his third paragraph, remarks on the fact of a swamp having been reclaimed without a farthing's cost to the State. The cost of the Prison labour would ordinarily have been paid for from the Municipal Funds. In the present case it was given as a government contribution. The condition of the Bazaar is unsatisfactory. It has a large sum to credit (Rs. 6847 on the 31st March 1868) and there is no reason why it should not be kept in proper order by the Magistrate, under whose charge it is, and who is responsible for its present state. Sanction has been accorded to the improvement of the existing Municipal Latrines. The state of the private Latrines is not good. The fact that they taint the wells in their neighbourhood, considered together with the now clearly proved fact that Cholera is in most cases propagated by the defecations of Cholera patients finding their way into sources of drinking water, is one which calls for the adoption of a speedy remedy, by Legislative enactment if necessary. The error of local officers attempting to remedy what is wrong by their own authority is perhaps worse than the disease ; an error into which the Deputy Commissioner and Civil Surgeon at Bassein were nearly falling as recorded further on, and it's danger consists, perhaps, as much in the impossibility of preventing this exercise of power from spreading beyond the remedy of the evil which it is primarily intended to cure, as in its intrinsic illegallity and the immediate harm it does, and especially is this so with zealous officers.

6. The Report of the Sanitary Commissioner regarding the bad water supply, promised in his Review at page 23, the Chief Commissioner will be glad to receive. The

Inspector General of Prisons has, in the remarks on the Gaol Report, been directed to cause an analysis of the water used in the Prison, to the bad quality of which Dr. Planck, the late Inspector General, thought the large number of bowel complaints amongst the convicts might be attributed.

RAMREE.
Pages.... .... .... 23, 88.

7. The Report on this Town, that the state of the Public Health has been unusually good, is satisfactory. The Report of the Sanitary Commissioner on the analysis of water made by the Officer in Civil Medical Charge will be of great use, and the Chief Commissioner will be glad to receive it.

SANDOWAY.
Pages.... .... .... 24, 90.

8. The condition of this Town, as reported by the Medical Officer in Charge, is far from satisfactory, and reflects no credit on the Local Officers. It is not clear why the provisions of Section 34 Act V of 1861, which was extended to Sandoway by Notification No. 104 Home Department, dated 26th June 1863, were not put in force; though it is primarily the duty of the Police to carry out the provisions of this Section, it is the duty of the Deputy Commissioner to see that they do so. There does not appear either, any reason why the Roads in the centre should not be kept in as good a condition as those in other portions of the Town. The condition of the Bazaar, and the state of the water supply are satisfactory. The Officer in Civil Medical Charge remarks in his Report on the absence of any Public Latrine. This is a want which, primâ facie, should not exist, and its remedy is within the competence of the Local Officers, who should be more ready to see that the wants of the people over whom they are placed are supplied, than to leave them for notice in Annual Reports.

RANGOON,
Pages.... .... .... 11, 40.

8. The great wants in this Town are still the same as formerly; a pure and plentiful water supply, efficient drainage, and building room. The want of water, and the bad drainage have been remarked on year after year. The great difficulties in supplying these wants are, that the demand for building room is so great, and that there are, no funds. A Committee was assembled at the commencement of the present year to consider the Sanitary State of the Town, and they submitted a Report on this subject. Some of their recommendations were unfortunately impracticable, but others were not so, and will, it is to be hoped, be successfully carried out. Surface drainage has to a great extent been provided, it is sewerage that is really wanted. The cost of constructing a system of sewers for any large town is enormous, and here in Rangoon, it would probably be greater than in most other places. The Town has only been in existence, it may be said since 1854, and it is its rapid growth which has rendered so conspicuous its want of water and of sewerage and which has increased to such an extent, the difficulties in supplying them. The Report of the Health Officer shews how much has really been done towards Sanitary improvement; and with what good results.

9. Small Pox, Measles, and Cholera have visited the Town during the year. A systematically arranged Vaccination Department is doubtless required. This point is under consideration, and its necessity will be shewn in detail in the remarks on the Vaccination Report.

10. The Cantonment Act for the prevention of contagious diseases has been extended to the Town since the close of the year.

BASSEIN.
Pages.... .... .... 18. 62.

11. The only Epidemic during the year was one of Cholera in December, which carried off 16 persons in the Town; but the Civil Surgeon *thinks* that the District suffered more heavily, having apparently no information to enable him to come to a certain conclusion on this point. This Report however was submitted through the Deputy Commissioner who should have been able to furnish full information. A personal care and interest in the people placed under them, an avidity of facts, and a strong desire and will to make use for the benefit of the people of facts learnt, by drawing conclusions from them and acting on such conclusions or by imparting the facts to others who can draw conclusions from them, are essential qualities for a good District officer. Here as elsewhere the River water seems to have been the means by which the Cholera poison was conveyed, and it would have been very advantageous to know to what extent the District suffered, whether the disease was confined to towns and villages on the banks of the Rivers, and whether the disease travelled down these Rivers or in any instances up them. The circumstances noted in the 11th paragraph of Dr. Nesbit's report merited close enquiry when taken in connection with the fact stated by the Sanitary Commissioner at page 17.

12. The great wants in Bassein are a proper system of drainage and better ventilation. It is by no means easy to enforce the adoption of Sanitary measures which are not in accordance with the habits and customs of the people, and it could not for a moment be tolerated that District Officers and Sanitary Officers should take the law into their own hands, and should not only urge on but enforce changes more quickly than the people can understand or appreciate them. When an Act is obtained there is security

against the zeal of Officers outstripping their judgment. The Civil Surgeon should read the remarks of the Commissioner of Pegu on his Report for 1866-67. He may rest assured that the improvement of a people by Education is attended with far fewer drawbacks than their improvement by despotic orders. "Any rash attempt to force on improve-"ments which are extremely distasteful to the people would not "only fail to accomplish the object in view but might be "productive of results highly inconvenient and even dan-"gerous." That persuasion and example and moral influence, have great effect he shews in his Report, when he states, in his 2nd paragraph, that a ward of the Town which was burnt down "has been rebuilt (without any interference "on the part of the Local authorities) in a manner, which "reflects credit on the good sense of the inhabitants." In 1866-67 the District officer and Dr. Nesbit wished in a similar, if not in the same case to force the people into building better houses, and adopted measures for this purpose which led to numerous petitions and appeals to the Commissioner of the Division who had to interfere. From this Dr. Nesbit may gather that in this as in many other things, persuasion is better than force and example than precept.

MYAN-OUNG, Pages.... .... .... 17, 54.

13. The public health at this station during the year was, on the whole good. There was no Epidemic during the year but a few cases of cholera occurred at various places on the banks of the Irrawaddy during November and December, the disease coming down from the Prome District where it attacked the inhabitants of villages on the river during October, November and December. Cholera also appeared in the Police Lines situated on the bank of the river, but was soon checked. Now that it is an established fact that Cholera is propagated by the excretions of an affected person, holding

the germs of the cholera poison in an active state, being by some means or other communicated to another, and that water is the vehicle in which this propagation very often if not always takes place, the reason why the Cholera confined itself to the bank of the river is not far to seek.

PROME,
Pages.... .... .... 14, 45.

14. There was an out outbreak of small pox in this town and in Swè-Doung, its near neighbour to the Southward, some 9 miles lower down on the same bank of the Irrawaddy, during the dry season and the first portion of the rains, the disease being imported in January by some travelling Shans: and Cholera was prevalent during the the latter part of the rains throughout the whole district. Both diseases were of a very mild type. The Cholera travelled from north to south along the Irrawaddy, but its source was not traceable. Prome was originally the the most unhealthy town in the Province, principally if not entirely owing to thefact of its being excessively swampy and having round it a broad deep and most offensive ditch excavated years ago by the Burmese. In 1862, almost the whole town—consisting of thatch and mat houses—was burnt down. Colonel Brown, the Deputy Commissioner, seized the opportunity given him of laying out the town with good broad streets, so arranged as to allow of subsequent further improvement as the inhabitants recovered from the terible loss they had suffered in the almost entire destruction of their property. But beyond laying out the town little could then be done. Gradually private individuals erected substantial houses of wood or of masonry with tiled and other incombustible roofs, instead of the miserable mat hovels raised a foot or two from the ground which formerly existed; the erection of dangerously inflammable buildings was more and more prohibited, sites were raised, marshes filled in, and now, what with

ago. The Town is built on high land with good drainage to the River, and the rains every year (there is a fall of over 200 inches,) thoroughly wash it out. Added to this many sanitary improvements were carried out in 1866-67 such as cleaning of drains, improved system of Slaughter houses, removal of dungheaps and cesspools; unfortunately the Municipal Fund of the Town has been exhausted in the construction of large works, and it is now very heavily in debt. It has been found necessary to dispense with the Health Officer and the Sanitary Gang, after an endeavour to induce the people to consent to a higher rate of Municipal Taxation. The state of the Fund, as that of all other Local Funds in the Province, has been under consideration; and sanitary measures will be resumed the instant money is forthcoming. Plans, for the improvement of Sanitation, for the abatement of sickness, and to ward off epidemics and diminish the death rate are more deserving of the expenditure of money than large ornamental or even useful works to aid material progress.

18 The principal cause of mortality during the year has been remittent fever, the large mortality under this head has not probably been caused by any malarious influences in the Town, but by the influx of fever stricken individuals from the Teak Forests. A Lock Hospital and a regular system of Registration and surveillance of Prostitutes is much required here as in most Sea Port Towns; not only because there is generally more syphilitic desease present but because circumstances render it so much more dangerous to many of the individuals attacked:—Residents have the advantage of being able at once to obtain medical treatment, but seamen probably "contract the disease a day or "two before leaving Port, and before they can arrive at "their destination, and avail themselves of scientific treat-

„ ment, they have either succumbed to the disease, or their " systems have become so saturated with the syphilitic " poison, that their future life is one of continued misery " and suffering." The matter has been under consideration, and the extension to the Town, of the Cantonment Act negatived. Further propositions will be submitted, it is to be hoped with a more successful result. The Chief Commissioner cannot concur with Dr. Marr, the Civil Surgeon that his Report is one to which little interest can attach. It is on the contrary a very full one, shewing the interest which Dr. Marr, now absent on leave in England on medical certificate, has always taken in his work, and the zeal and earnestness with which he has pressed on Sanitary Reforms and other measures of improvement.

SHWEGYEEN.

19. The Officer in Civil medical charge has submitted no Report on Public Health. From his remarks on the Dispensary of this station, however, it appears that the Public Health was generally good, and that the Deputy Commissioner carried out the Sanitary measures which the medical the officer recommended.

TAVOY.

Pages.... .... .... 20, 77.

20. The Report on Health of this Town was prepared by the late Dr. Whitaker who was the Civil Surgeon. Of the actual Health of the Town but little is recorded, but a good deal is said regarding its defective Sanitary state. This appears to be very bad, though not entirely the fault of the District Officers, as the town from its situation is extremely difficult to drain, and the habits of the people are dirty in the extreme, to which latter cause the disease in the Southern portion of the Town is principally attributed. The Sanitary Commissioner has noted the state of Tavoy in his Report, as being about to receive his early attention. The Chief Commissioner will be glad to receive his opinions as to what can be done to remedy

these improvements, the cost of which was defrayed from Local Funds—and with the increased prosperity of the inhabitants the appearance of the town and its sanitary state are greatly improved and are still improving. A plan is now under consideration for filling up the ditch round the town which the Civil Surgeon rightly characterizes as "the principal "disturber of the Public Health in Prome." The plan at present proposed appears to rest on, or to be any rate in some degree dependent on, the supposition that the annual rainfall at Prome is 40 inches. This is certainly not correct. As the Sanitary Commissioner has pointed out the annual rainfall averages 70 inches. This amount, so much greater than at Thayetmyo 50 miles to the north, where it is only 42 inches, and at Myan-Oung about 50 miles to the south where it is 58 inches, is probably owing to the surrounding hills—but from whatever cause it exists it must materially affect all calculations as to drainage and the rise of water in the Town. The Bazaars, though they might perhaps have been kept in a more cleanly state, have on the whole been in good order; the meat supplied in the town for consumption is brought from Slaughter sheds so far removed that there is no fear of the Public Health being influenced by them, and is of a superior description. The water might be better, but undoubtedly the cause of the high mortality was not the water, but the malarious influence of the swamps and ditch. The first attempt to remedy matters which was commenced with energy and will and which was attended with any success was made by Colonel Brown, now Commissioner of Tenasserim, when Deputy Commissioner; and what he commenced has been carried on by his successors, so that there is hope of Prome being ranked among the healthiest instead of among the unhealthiest towns in the Province.

THAYETMYO.
Pages ..... ..... 14, 43.

15. The Report of the Civil Surgeon, Dr. Miller, is excessively meagre and little or no knowledge as to the state of the Public Health during the year can be gleaned from it. The great wants were Public Latrines, and a Conservancy Establishment: these have since been sanctioned. The Assistant Commissioner fears that their cost will be a heavy strain on the Municipal Fund. If this is so, it cannot be avoided: Sanitation *must* be provided for as long as there are funds, and the expenditure on the arrangements sanctioned will not absorb the whole of the receipts. The mistake of hoarding Local Funds when improvements are wanted is only less than that of recklessly wasting them on useless plans or on too expensive buildings. This extravagance is *certainly not the case* now at Thayetmyo, and the Local Officers will be held personally responsible that it never is so.

TOUNGOO.
Pages ..... ..... 17, 60.

16. The Health of the inhabitants of Toungoo has been good. The Civil Surgeon has submitted a somewhat meagre report on this subject, giving most of the details in his Report on Births and Deaths. It would have been better if he had not done so, though there can be no doubt that the two subjects, Public Health and Births and Deaths, are intimately connected. There was no outbreak of Cholera, and the deaths from fever fell from 95 to 58. Dysentery however was more fatal this year than last: but to what extent, the Civil Surgeon does not shew.

MAULMAIN.
Pages ..... ..... 19, 69.

17. The Public Health of this station has been unprecedentedly good, and the Civil Surgeon in his Report observes that the year "has far surpassed any previous one, in point of exemption from ordinary disease, and also in the entire absence of epidemic disease" since he was appointed Civil Surgeon eight years

the present state of the place which, from Dr. Whitaker's Report appears to be very bad. The recommendations of of Dr. Whitaker that the Civil Surgeon should, as Sanitary Officer have power to enforce his orders, requiring the resident Engineer to carry out improvements without reference to the District Officer, can hardly be carried out until Civil Surgeons collect and manage entirely the Municipal Funds, duties which it is hardly probable will be imposed on them just yet.

MERGUI.
Pages.... .... .... 21, 84.

21. The state of the Health of this Town is satisfactory. The site of the Town, built on two or three small Laterite Hills at the mouth of the Tenasserim River, secures, as at Maulmain, good drainage. The inhabitants though not rich are comparatively well off, each house owner having his little plot of garden ground on which his house stands, by which overcrowding is prevented. The conservancy is well attended to. The provision by private individuals of 3 Latrines out of the 7 in the Town is very satisfactory. The great drawback, the absence of good fresh water, might possibly be obviated by sinking wells deeper than 30 feet, which is the greatest depth of any well at Mergui? It would be as well if this were tried, and the Commissioner of the Division will be addressed on the subject, the results of the enquiry being communicated to the Sanitary Commissioner.

AKYAB.
Pages ..... ..... 34, 95.

22. The Returns of Births and Deaths for this Town, prepared by the Magistrate, do not agree with those of the Civil Surgeon nor do the two statements as to the Population agree. The Registration Department is under the orders of the Magistrate, and his figures must consequently be accepted—though there has been a marked improvement in the Health of the

Town, the death rate 34.1 per 1000 is high. The birth rate 42.2 per 1,000 is fair.

RAMREE.
Pages ..... ..... 36, 106.

23. The birth rate in this Town has increased by 9. per 1,000 (from 17. per 1000 to 26.) and the death rate has fallen from 34. to 23. per 1000. It is incredible that the Returns can be correct. Captain Plant puts forward a theory regarding births, which would account for their greater number in April and May throughout the Province by the greater number of marriages immediately after the assessment and collection of the Capitation Tax in July and August, as a poorish man naturally postpones his marriage till after he has paid his Tax at bachelor rates. No application of Rules founded on this theory would induce a greater number of births, for, supposing it to be correct, the only effect of altering the time of collection of the Tax would be to alter the season of the largest number of births. The argument is ingenious and its only fault is that it is founded on utterly false premises; the greatest number of births do *not* take place throughout the Province in April and May, but in January. The Chief Commissioner is glad to see an officer taking an interest in his work but would suggest to Captain Plant the advantage of his being certain of his data before he proceeds to theorize.

SANDOWAY.
Pages.... .... .... 35, 112.

24. The birth rate given for this town, 50 per 1,000 is too high. The death rate 26-8 appears very low.

RANGOON.
Pages ... .... .... 31, 1.

25. The death rate in Rangoon according to the Magistrate's Returns is 2.2 per cent, the birth rate being only 2.1—1,593 persons died and 1,543 were born.

26. The death rate has fallen this year, from 55 to 34 per thousand. This is probably owing to a greater correctness in the Returns. The birth rate is 55. per 1000.

BASSEIN, Pages ..... ..... 32, 57.

27. There were 201 Births against 121 deaths—the rates being 35,9 and 21. This death rate is very low.

MYANOUNG, Pages.... .... .... 32, 26.

28. The births increased from 296 to 318, the deaths decreased from 244 to 223. This would give an increase of 43. not of 1 as the Sanitary Commissioner calculates. The Report of the Civil Surgeon is most meagre. He is no longer Civil Surgeon.

THAYETMO, Pages .... .... .... 48, 9.

29. The death rate has risen from 36 to 49 per 1000, chiefly owing to casualties from epidemic diseases; there being 145 deaths from Cholera alone. The birth rate was 50 per 1,000 or only 1 per 1,000 in excess of the deaths.

PROME, Pages.... .... .... 31, 11.

30. There appears from the Returns to have been a considerable decrease in the Birth rate (from 36.2 to 24.7 per 1,000) bringing it below the death rate which was 28.6 per 1,000, and this although it has decreased from 28.7 last year. These facts fully show that the Returns must be inaccurate.

TOUNGOO, Pages.... .... .... 32, 49.

31. Unfortunately the births and deaths in the Native Infantry Regiment stationed here have been included in the Returns. This should not have occurred. The Return however cannot be accepted as correct. The Birth rate being 15.7 per 1,000 and the death 15.5.

MAULMAIN, Pages.... .... .... 33. 66,

32. The death rate is given as 14.10 per 1,000. The death rate as 25.88 per 1,000. The Medical Officer believes in the Returns, but they can hardly be correct.

SHWE-GYEEN, Pages ..... ..... 34, 89.

MERGUI.
Pages ..... ..... 33, 83.

38. Dr. Abbey the Civil Surgeon declines to vouch for the accuracy of the Returns; and as the population of the town is not given the birth and death rate cannot be calculated from these Reports. The Deputy Commissioner in his Population Report gives the number as 9,381; this would give a death rate of 26.4 per 1,000 and a birth rate of 39.4 per 1,000.

TAVOY,
Pages..... .... 33, 37.

34. No Report by the Civil Surgeon has been submitted, though why it is not clear. From the Deputy Commissioner's Report it appears that the Birth rate was 28 per 1,000, the death rate 18. Both are very low.

35. The following table gives the statistics for the Province:

| Towns. | Population. | Births. | | | | | | Deaths. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Males | Females. | Total. | Percentage. | | | Males. | Females. | Total. | Percentage. | | |
| | | | | | Males. | Females. | Total. | | | | Males. | Females. | Total. |
| Akyab ... ... | 15,536 | 360 | 307 | 667 | 2.31 | 1.98 | 4.29 | 265 | 265 | 530 | 1.70 | 1.70 | 3.40 |
| Kyouk-Phyoo ... ... | 3,590 | 48 | 45 | 93 | 1.33 | 1.25 | 2.58 | 51 | 30 | 81 | 1.42 | 0.83 | 2.25 |
| Sandoway ... ... | 2,163 | 50 | 58 | 108 | 2.31 | 2.68 | 4.99 | 28 | 30 | 58 | 1.30 | 1.38 | 2.68 |
| Rangoon ... ... | 71,189 | 883 | 660 | 1,543 | 1.24 | 0.92 | 2.16 | 953 | 640 | 1,593 | 1.33 | 0.90 | 2.23 |
| Bassein ... ... | 16,078 | 430 | 466 | 896 | 2.67 | 2.90 | 5.57 | 293 | 257 | 550 | 1.82 | 1.60 | 3.42 |
| Myan-Oung ... ... | 5,598 | 94 | 107 | 201 | 1.67 | 1.91 | 3.58 | 69 | 52 | 121 | 1.23 | 0.93 | 2.16 |
| Kyanging ... ... | 7,661 | 112 | 92 | 204 | 1.46 | 1.20 | 2.66 | 82 | 79 | 161 | 1.07 | 1.03 | 2.10 |
| Henthadah ... ... | 14,320 | 324 | 289 | 613 | 2.26 | 2.02 | 4.28 | 218 | 207 | 425 | 1.53 | 1.43 | 2.96 |
| Zaloon ... ... | 3,457 | 107 | 102 | 209 | 3.09 | 2.95 | 6.04 | 75 | 71 | 146 | 2.17 | 2.05 | 4.22 |
| Prome ... ... | 23,420 | 614 | 566 | 1,180 | 2.62 | 2.41 | 5.03 | 669 | 493 | 1,162 | 2.86 | 2.10 | 4.96 |
| Thayetmyo ... ... | 8,000 | 166 | 152 | 318 | 2.07 | 1.90 | 3.97 | 126 | 97 | 223 | 1.57 | 1.21 | 2.78 |
| Shoay-Doung ... ... | 10,385 | 318 | 277 | 595 | 3.06 | 2.66 | 5.72 | 191 | 125 | 316 | 1.84 | 1.20 | 3.04 |
| Toungoo ... ... | 9,648 | 123 | 115 | 238 | 1.27 | 1.19 | 2.46 | 150 | 125 | 275 | 1.56 | 1.30 | 2.86 |
| Maulmain ... ... | 65,500 | 618 | 405 | 1,023 | 0.94 | 0.62 | 1.56 | 626 | 364 | 990 | 0.95 | 0.55 | 1.50 |
| Shwé-Gyeen ... ... | 7,688 | 56 | 53 | 109 | 0.72 | 0.69 | 1.41 | 83 | 116 | 199 | 1.08 | 1.50 | 2.58 |
| Tavoy ... ... | 14,506 | 199 | 208 | 407 | 1.37 | 1.43 | 2 80 | 150 | 123 | 273 | 1.03 | 0.85 | 1.88 |
| Mergui ... ... | 10,000 | 200 | 170 | 370 | 2.00 | 1.70 | 3.70 | 152 | 96 | 248 | 1.52 | 0.96 | 2.48 |
| Grand Total ... | 2,88,740 | 4,702 | 4,072 | 8,774 | 1.62 | 1.41 | 3.03 | 4,181 | 3,170 | 7,351 | 1.44 | 1.10 | 2.54 |

## GENERAL REMARKS.

36. The Reports have generally speaking been carefully prepared,—though in certainly one instance—Thayetmyo—no credit is in the slightest degree due to the officer who framed the Report. There is however a general want of method which renders the comparison of one Report with another, and the compilation of general statistics a work of extreme trouble. In several cases Civil Surgeons do not seem to have received that assistance from District officers in the way of information, and carrying out the measures recommended, which they had a right to expect, and which the Government will insist on being given. It has been over and over again pointed out that District Officers are expected to do more than to carry out the routine work of their Magisterial and Collectorate Offices, and that it is not only from their Revenue and Judicial Reports that they are judged, and will be selected for promotion. In some cases, though apparently not in all, the Reports of the Civil Surgeons have been submitted through the Deputy Commissioners. With the exception of Colonel Stevenson, the Commissioner of Arakan, whose remarks are very full and complete, the Assistant Commissioner at Thayetmyo, Major Munro, is the only officer who appears to have thought himself called on to do more than forward on the Report.

37. The Chief Commissioner expects that next year and thence forward the Deputy Commissioners and Magistrates will afford every assistance to the Civil Surgeons, and will furnish them with full and complete information upon every point on which they may desire it. The Public Health and Births and Deaths Reports should be sent to the Deputy Commissioner who should review them at length —submitting his Remarks and the Reports to the Sanitary Commissioner—who will be good enough to issue orders on

this subject and on the plan on which the Reports are to be framed and to see that they are carried out. There can be no doubt that without a good system of registration of births and deaths, sanitary knowledge can make little progress. Though the Returns cannot be accepted as correct their accuracy is probably greater now than when the system was first introduced some years ago; still much is wanting to make them reliable and useful, and the Chief Commissioner is glad to have learnt that Dr. Cowie has now under consideration a plan for improving and systematizing the labours of the Registration Department.

38. The order of the Towns laid down in Notification No. 155 General Department dated 17th September 1867, has not been followed. Officers should number the paragraphs of their Report.

A. FYTCHE, COLONEL,
*Chief Commissioner, British Burma,*
*Agent to H. E. the Viceroy, and Governor General.*

# PUBLIC HEALTH REPORTS.

No. 29.

# PUBLIC HEALTH

To

MAJOR H. N. DAVIES,

*Secretary to the Chief Commissioner,*

*British Burma.*

DATED PROME, 28TH JUNE, 1868.

SIR,

I have the honor to submit for the information of the Chief Commissioner, the following Health Report of British Burma, for the year 1867-68, and in doing so, I would remind you that my appointment to the post of Sanitary Commissioner for British Burma, is of too recent a date to enable me to speak with sufficient weight on some of the points prominently noticed by the Civil Surgeons of this Province. I have not had time to inspect the several stations and judge for myself.

The Report is divided into two heads:—

I. PUBLIC HEALTH.

II. BIRTHS AND DEATHS.

The following documents have been consulted in drawing up the Health Report for 1867-68 :—

| Division. | Author. | No. and date. |
|---|---|---|
| PEGU | | *Reports.* |
| | A. J. Cowie, Esq., Civil Surgeon, Rangoon ..... ..... ..... | 1st April 1868. |
| | J. Miller, Esq., M. D. Civil Sergeon, Thayetmyoo ..... ..... ..... | " |
| | Captain Munro, Asst. Commissioner, Thayetmyoo ..... ..... ..... | 18th April 1868. |
| | K. N. MacDonald, Esq., Civil Surgeon, Prome ..... ..... ..... | 10th " " |
| | P. E. Paul, Esq. in Medical Charge, Myanoung ..... ..... ..... | 1st " " |
| | C. Nisbet, Esq., Civil Surgeon, Bassein ..... ..... ..... ..... | 25th " " |
| | C. R. J. Parker, Esq., Civil Surgeon, Toungoo ..... ..... ..... | 25th " " |
| | Captain A. McMahon, Deputy Commissioner, Toungoo ..... ..... | Letter No. 100, 27th April 1868. |
| MOULMEIN | G. Marr, Esq, M. D., Civil Surgeon, Moulmein ..... ..... | 28th March 1868. |
| | M. H. Busteed, Esq., M. D., Offg. Civil Surgeon, Moulmein ..... | 15th April 1868. |
| | J. W. T. Whitaker, Esq., M. D., Civil Surgeon, Tavoy ..... ..... | 11th " " |
| | W. Abbey, Esq., Civil Surgeon, Mergui ..... ..... ..... ..... | 1st " " |

| DIVISION. | AUTHOR. | NO. AND DATE. |
|---|---|---|
| ARRACAN | | *Reports.* |
| | M. White, Esq., M. D., Civil surgeon, Akyab .... ..... ..... ..... | 1st April 1868. |
| | A. Thomas, Esq., in Medical Charge, Kyouk Phyoo ... ..... ..... | 31st March 1868. |
| | C. E. Pyster, Esq., in Medical Charge, Sandoway ..... ..... ..... | 1st April 1868. |

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# PUBLIC HEALTH,

## PEGU DIVISION.

### REPORT—RANGOON

The Civil Surgeon points out that the grand desiderata to make Rangoon a healthy town are, an ample supply of pure water, efficient sewerage, fresh air and house accomodation, all of which are now wanting.

The important works to this end are I am aware receiving that consideration at the hands of the Local Government which they deserve.

Public attention is drawn to the increasing defectivo Sanitary condition of the town especially the Suburbs. Great stress is laid upon the want of house accomodation for the poor and we are warned against the evil of unlimited overcrowding. Typhus fever is reported as having established a footing in some of the more densely populated parts, and undoubtedly the positions mentioned are suitable centres for wide spreading circles of this most fatal malady. Cholera was sporadic in charaoter and visited its usual haunts Yan-

bonquin, Botatoung and Poozoondoung. It caused 17 deaths. Small-pox which is now Endemic carried off 56 persons. A hint is thrown out for the information of the Health Officer of the Port, which it is hoped he will attend to. The inspection of European vessels is not so much wanted as a thorough scruting of the cooly and other native craft, which yearly visit this Port.

There is little doubt but that small-pox is more generally imported from the Straits, China and the Coasts of India than in any other way. Measles still prevails. It is a disease which is almost always Epidemic. This visitation has not been of a severe type, altho' it has led to many deaths. Exposure during convalescence and improper clothing are blamed as the true causes of the fatal results. The mortality from this complaint was 158.

The practice of vaccination is not what it should be. The Native Assistants are as a rule seeking other and more remunerative posts and are not therefore interested in their work. A more extended system is recommended. This subject will be considered separately.

A properly constructed slaughter house is much required. The plan adopted at Thayetmyoo is a good one and I strongly urge the providing of similar conveniences for Rangoon. The present shed near Poozoondoung is not readily accessible, and I know animals are killed in the town in consequence of this. Shambles pay well in all our large towns and therefore the expense of building them should not form an obstacle to their erection. I am decidedly of opinion that more than one slaughter house is required for Rangoon. Adopting the Thayetmyoo plan no offensive smells are possible and consequently the sheds should be conveniently situated.

Public latrines are urgently required in the absence of sewerage. There are several such places belonging to private individuals, the contents of which are sold to Chinamen gardeners. Conveniences of this nature on a sound plan, but superintended by the Conservancy Department, might be constructed near the bazars and in the suburban localities, but I am afraid the supply would far exceed the demand and that Chinamen would not be forthcoming to remove the excreta. The owners of the large Bazars should be responsible for their own conservancy. The dry earth principle must be adopted where practicable.

The Soortee and other Bazars in Rangoon cannot be kept clean, unless the provisions of the Municipal act applicable to Rangoon and published in Browne's Manual are strictly enforced.

The greater part of the Yanbonguin quarter has been raised by the D. P. W. This of course is an immense improvement. Additional room however for the extension of the squatter population is a very important sanitary requirement, and until sufficient building space has been provided for the poorer classes, I cannot recommend the extension of a Lodging Act to Rangoon. The land lying beyond Keighly-street west, as far as Kemmendine; also the low ground at Botatoung and to the Eastward, must be raised and drained to accomodate the crowds seeking building sites. These quarters including Poozoondoung are overcrowded and are hotbeds of disease, yet it is impossible to thin them out unless we can provide suitable places for the excess of people to go to.

Venereal diseases have been reported on separately. I understand the Contagious Diseases Act is to be brought into operation at all the Sea Port towns of this Province.

I trust that its provisions will also be extended to the Civil population.

I have not alluded to the water supply of Rangoon, because I understand that the Kandawgyee or Royal Lake project has been sanctioned, and that pipes for the conveyance of this wholesome water will shortly be laid down.

Those wells in the Town known to contain good water especially "Rebecca's," in Phayre street, should be covered in and furnished with three or four good pumps each.

## THAYETMYOO.

Dr. Miller's report is very short and meagre. He says, I consider "Thayetmyoo one of the healthiest towns in Burma," but does not mention a word about the public health during the past year—"Drainage is also good, pucca drains are being made in most of the new streets." I presume Dr. Miller alludes to a few culverts lately built.

The greater part of the deaths we are told "occurred from fever" and here we are left in the dark as to the extent of the disease and the degree of mortality. Public Latrines, Conservancy Carts and a Conservancy staff mentioned in this report have, I understand, been sanctioned.

Captain Munro in forwarding Dr. Miller's report mentions however that Cholera proved fatal to 19 persons between October 12th and 9th December 1867, and that Small-pox which appeared in the month of January carried off six children. At the time he wrote, the 18th April the desease was still present in the town but "disappearing rapidly.

## PROME.

Dr. MacDonald reports that both Cholera and Small-pox visited this district as Epidemics. The first case of

the former appearing on the 29th October and the latter disease in the month of January 1867. Both diseases however were "fortunately of a very mild type" and in trying to "retrace the progress of these diseases from their original sources" it was "ascertained that the Small-pox originated among some itinerant Shans in the Nawaing Quarter of the town." It is thought, and with much reason, that the practice of innoculation is "the principal cause of the disease having lingered so long about the town." (It is still present). The mildness of the Epidemic in my opinion however, is due to the fact that nearly all Burmese above 5 years of age are protected by that very innoculation.

The spread of Cholera is due to the scanty and bad water supply. This disease proceeded from North to South following the left bank of the river. It came from where it nearly always does come in this country, down the Kyendwen river from the direction of "Munipoor." No less than 145 persons succumbed to the disease in Prome.

Measles also made its appearance in the station. It commenced in the month of February last and was imported by some Madras Coolies from Rangoon. The disease is still prevalent—12 deaths up to the 10th April had occurred.

Dr. MacDonald repeats what has time and again been reported of the bad sanitary condition of Prome. Vast improvements however, have been made to my knowledge in the interests of the public during the past ten years. It is hopeless to expect great changes at once. Time and money will yet accomplish great things. Prome has already benefited very considerably in point of health by the public works which have been undertaken in its behalf.

The swamp spoken of by Dr. MacDonald is to be filled in. The tramway for that purpose has already been shipped to Prome.

The sanitary improvements which have been effected during the year have made "rapid strides" and Dr. MacDonald thinks that "Prome may look forward to a hopeful future." I quite concur in this opinion.

With regard to para 17 of this report I have informed Mr. Dunn the Executive Engineer, that the annual average rain fall at Prome is 70 Inches and not 40 as stated.

Public privies for the town are urgently required. This will form the subject of a separate report.

The water supply is also an important matter and will receive attention in my Inspection Report.

Food is a question of "supply and demand." I am glad however to learn that generally the articles exposed for sale in the Prome Bazars "have been of a superior description and that no tainted animal food," as far as can be ascertained, "is ever offered for sale in the markets."

The Prome Municipal Fund is a rich-one. I would therefore strongly recommend to the Chief Commissioner, that the usual salary of one hundred rupees per mensem be sanctioned and that Dr. MacDonald be appointed to the post of Health Officer as early as possible.

The slaughter house should be frequently inspected by the Health Officer.

The public health has not been good and Dr. MacDonald thinks that the high mortality is due chiefly to malarious influences. This is undoubtedly the case.

## MYANOUNG.

Mr. Paul in Medical charge of this station states that the public health has been good throughout the year.

Cholera made its appearance in the Police lines, and Mr. Paul asks the following questions: "What was the cause of the disease and how was it, that, the disease only confined itself to the Police lines and those living near, escaped the infection." The answer to all this is sufficiently obvious. An Epidemic of Cholera came down the river and attacked the Police lines because their Sanitary Condition was bad. This is evident from Mr. Paul's own words, viz: "However the measures calculated to arrest its spread being actively employed, the dire disease was hindered from further progress." By this I presume the Lines were placed in a proper Sanitary state and the water supply attended to. Cholera is propagated by the excretions of an affected person, holding the germs of the Cholera poison in an active state, being by some means or other communicated to another. It is now an established fact that this disease is spread in no other way.

Mr. Paul remarks that the Officers of the station have enjoyed good health throughout the year.

## TONGOO.

In this station there has been a large falling off in the mortality from fever, and Dr. Parker thinks this due to the more general use of English medicines among the people. Dysentery however increased in severity.

This document partakes of a "Births and Deaths Report" and is therefore unsatisfactory.

## BASSEIN

Dr. Nisbet the Civil Surgeon remarks that the public health may now be considered satisfactory. Part of the Athaygyoo quarter of the Town was destroyed by fire, but has been rebuilt in a greatly improved style. The sites of the houses have been raised and drained.

Epidemic Cholera appeared in the month of December destroying 16 persons. Sporadic cases also occurred from time to time, otherwise the station has been free from Epidemics. Cholera would appear in Bassein to affect the seafaring population very severely as a rule, and Dr. Nisbet attributes this to the bad water supplied to the sailors. Strict rules will have to be framed to meet this end. Wholesome water in British Burma is obtained in most of our stations with the greatest difficulty.

A copy of the "Prophylactic rules" drawn up by Dr. Nisbet has not been forwarded to me.

It is remarked that Beriberi occurred in the Jail and that a nourishing diet with "a free use of Gin Punch combined with Calomel to salivation, appeared to be attended with satisfactory results." In the Irrawaddy Division Calomel in the treatment of Beriberi has been thought unnecessary. Further information on this subject would be very interesting.

Dr. Nisbet describes the murr ain disease as witnessed by himself among his own cattle. The Post mortem appearances are also given very fully. I would suggest that Dr. Nisbet be requested to furnish a special report on this important subject, for printing and general circulation.

A proper system of drainage, water supply and the raising of low lying places are mentioned as the great san-

itary requirements of Bassein. But as I have already said these are sanitary works necessitating the outlay of large sums of money and cannot be attended to all at once.

# MOULMEIN DIVISION

## REPORT—MOULMEIN

Dr. Marr's report which is full and complete, states, that the public health has been unprecedentedly good. The last year "surpassed any previous one, in point of exemption from ordinary disease, and also in the entire absence of Epidemic disease."

The appointment of Health Officer, it is to be regretted, owing to the bankrupt state of the Municipal funds, was abolished : Moreover, the Conservancy gang was also dispensed with. Dr. Marr thinks that the "healthfulness of Moulmein" during the past year was due to the sanitary activity which reigned during 1866-67.

Dr. Marr notwithstanding these drawbacks paid every attention to the sanitary condition of the town, in all its branches. He supports the opinion of Medical men in ascribing bowel complaints to the use of unwholesome water. I know that measures for an improved supply of this article were recommended in last year's report, but I am not aware whether any steps have been taken to remedy the evils complained of.

Dr. Marr concludes his remarks on public health in Maulmain thus: "My report for this year, is therefore, one which has very little of interest attached to it, as I am unable to record the execution of any important sanitary reforms, owing to the unfortunate monetary condition of the municipal fund."

Colonel Brown, the Commissioner, and Dr. Marr have both warned the people of Moulmein that unless they bestir themselves and provide funds for the continued sanitary improvements of their town, they must expect the good work already begun, and which has been attended by such marked benefit, to retrograde. We all know what this means. It means in the absence of sanitation of any kind whatever, increased sickness, epidemics and a rapidly augmenting death rate.

## TAVOY

Dr. Whitaker describes the north portion of the town as unhealthy, on account of a morass in this direction. The Southern portion is accounted no better but for different reasons. There the dirty habits of the people themselves, are assigned as the cause of its unhealthfulness. There would appear from this report to be a difficulty in draining Tavoy effectively, owing to its low lying position.

The water is obtained from wells and is said to be impure.

Drainage is evidently either absent altogether in this town or it is not looked after as it should be.

The public Latrines are defective. They cannot be suitably situated. This and the other points already mentioned will receive early attention at my hands.

It is reported that portions of the town are thickly wooded, and the Civil Surgeon recommends that the trees should be cleared away. I cannot support this opinion, or in fact offer any comments on the subject, until I have seen the locality for myself. Trees are valuable agents in warding off malaria.

## MERGUI

The most remarkable feature in Dr. Abbey's report is its brevity. The public health is described as good. Fevers during the year were very prevalent. The Conservancy is said to be good and the public latrines, of which there are four, are kept in good order.

The water is slightly brackish and Dr. Abbey suggests seeking for springs in a higher level. This should be attended to.

## SHOAYGEEN

The sanitary report on this station has not yet reached me. The attention of the Medical Officer in charge has been called to the delay in its submission.

# ARRACAN DIVISION.

## REPORT—AKYAB.

Great and important Sanitary improvements have been carried out in Akyab during the year. A large filthy tank has been filled up and dense jungle in and about the town removed. "The result" Dr. White remarks "of this great clearance has borne fruit an hundred fold." In this report I read that trees were "thrown" which became the property of the Jail for firewood. I hope no unnecessary felling has taken place. Most of the trees in Akyab were planted by master hands in Sanitation. The preservation of all trees in our stations, and especially in towns should be watched with great care. I consider that the Station of Akyab once so unhealthy, owes much of its present salubrity to its fine trees.

Malarious diseases have been less prevalent and undoubtedly the clearance of low and dense jungle has materially helped to bring about this happy improvement. Incalculable good must result from the bunding and filling

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in of the low ground to the north of the point. These important works have been carried out at the suggestion of the Health Officer Dr. White.

The Sudder Bazar is not clean. It is not attended to as it should be. Dr. White remarks that the inclination of the drainage towards the river is sufficient and that its filthy state "has been reported frequently, but without effect." This I believe is a government bazar and therefore should be a paragon of good Sanitation. That it is not so, is clearly the fault of the plan on which the bazar is constructed, or of the officer whose duty it is to superintend its cleanliness. If it is not properly paved, drained and provided with a good water supply I can quite understand the difficulty of keeping it clean.

Messrs. Bulloch Brothers & Co: are, or were, the owners of a large bazar in Akyab. Dr. White however does not mention its condition. I therefore conclude that it is what it should be, perfectly clean and well managed.

I do not know the principle of the Akyab Public latrines. The Health Officer describes them as in "good repair and seem sufficient for the requirements of the town," yet further on states that private privies exist as heretofore and "in all localities tainting the water of the wells in their vicinity, and rendering the houses round and about them offensive and unhealthy." It is evident therefore that the three public privies are not sufficient for the requirements of the town. The wells which are so tainted should be filled in at once.

In the concluding para of this report Dr. White remarks that there is a great deficiency of good water in Akyab, which is greatly felt by the shipping

I hope to be able on visiting this station to offer some practicable suggestions on the subject of its water supply for the Chief Commissioner's consideration.

## KYOUK PHYOO

It is stated in this report that the station has been visited by "all sorts" of ailments, but of a "milder and lesser destructive variety" than formerly. Mr. Thomas the author of these remarks says that he has "analysed several of the specimens (of water) sent for by me from the surrounding villages and find that they are impregnated with a large quantity of impurities such as are detrimental to health." This Officer will be requested to furnish my Office with a copy of the above analyses, which on its receipt, I shall have the honor of forwarding to the Chief Commissioner for information.

I think Mr. Thomas' recommendation, that the wells and tanks about the station should be cleaned out yearly, a good one and worthy of attention.

No mention is made of public privies as existing in this town, by which I conclude that there are none.

## SANDOWAY

Owing to the unseasonable weather towards the end of the South West monsoon unusual sickness prevailed but the character and extent of this sickness is not mentioned. Mr. Pyster describes a state of filth as existing in the town which is not creditable to the Officer in Charge.

Public latrines are required. The town is well drained and the Bazar is described as in good order. The well water is also said to be abundant and good.

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# BIRTHS AND DEATHS.

## 1867-68.

LIST OF DOCUMENTS SUBMITTED.

### PEGU DIVISION—RANGOON.

1. Civil Surgeon's Report.
2. Magistrate's Returns, four.

### THAYETMYOO.

3. Civil Surgeon's Report.
4. Assistant Commissioner's Returns, four.

### PROME.

5. Civil Surgeon's Reports two.
6. Returns, eight.

### MYANOUNG.

7. Medical Officer's Reports, four.
8. Returns, sixteen.

### HENTHADAH AND ZALOON.

9. Medical Officer of Myanoung Report.
10. Returns, eight.

### TOUNGOO.

11. Civil Surgeon's Report.
12. Returns, four.

### BASSEIN.

13. Civil Surgeon's Report.
13. Returns, four.

### TENASSERIM DIVISION—MOULMEIN.

15. Officiating Civil Surgeon's Report.
16. Magistrate's letter and 4 Returns.

## TAVOY.

17. Deputy Commissioner's Report.
18. Returns, four.

## MERGUI.

19. Civil Surgeon's Report.
20. Returns, four.

## SHOAYGYEEN.

21. Medical Officer's Report.
22. Returns, four.

## ARRACAN DIVISION—AKYAB.

23. Civil Surgeon's Report.
24. Returns, four.
25. Magistrate's Returns, four.

## KYOUK PHYOO.

26. Medical Officer's Report.
27. Deputy Commissioner's letter and 4 Returns

## SANDOWAY

28. Medical Officer's Report.
29. Returns, four.

The following tables exhibit the total Births and Deaths according to Sex, registered in each of the 17 towns in the three Divisions of British Burma during the year 1867-68.

## BIRTHS.

| | Births. | Males. | Females. | Total. |
|---|---|---|---|---|
| PEGU DIVISION. | Rangoon ..... ..... | 883 | 660 | 1543 |
| | Thayetmyoo ..... ..... | 166 | 152 | 318 |
| | Prome ..... ..... ..... | 614 | 566 | 1180 |
| | Shoaydoung ..... ..... | 318 | 277 | 595 |
| | Myanoung ..... ..... | 94 | 107 | 201 |
| | Kyanging ..... ..... | 112 | 92 | 204 |
| | Zaloon ..... ..... ..... | 107 | 102 | 209 |
| | Henthadah ..... ..... | 324 | 289 | 613 |
| | Toungoo ... ..... ..... | 123 | 115 | 238 |
| | Bassein ..... ..... ..... | 430 | 466 | 896 |
| | Total Births..... | 3171 | 2826 | 5997 |
| TENASSERIM. | Moulmein ... ..... ..... | 618 | 405 | 1023 |
| | Tavoy ..... ..... ..... | 199 | 208 | 407 |
| | Mergui ..... ..... ..... | 200 | 170 | 370 |
| | Shoay-gheen ..... ..... | 56 | 53 | 109 |
| | Total Births..... | 1073 | 836 | 1909 |

| | BIRTHS. | MALES. | FEMALES. | TOTAL. |
|---|---|---|---|---|
| ARRACAN. | Akyab ..... ..... ..... | 360 | 307 | 667 |
| | Kyouk Phyoo ..... ..... | 48 | 45 | 93 |
| | Sandoway... ..... ..... | 50 | 58 | 108 |
| | Total Births..... | 458 | 410 | 868 |
| | Grand Total..... | | | 8774 |

## DEATHS.

| | DEATHS. | MALES. | FEMALES. | TOTAL. |
|---|---|---|---|---|
| PEGU DIVISION. | Rangoon ... ..... ..... | 953 | 640 | 1593 |
| | Thayetmyoo ..... ..... | 126 | 97 | 223 |
| | Prome ..... ..... ..... | 669 | 493 | 1162 |
| | Shoaydoung ..... ..... | 191 | 125 | 316 |
| | Myanoung ..... ..... | 69 | 52 | 121 |
| | Kyanging... ..... ..... | 82 | 79 | 161 |
| | Zaloon ..... ..... ..... | 75 | 71 | 146 |
| | Henthadah ..... ..... | 218 | 207 | 425 |
| | Toungoo ... ..... ..... | 150 | 125 | 275 |
| | Bassein ... ..... ..... | 293 | 257 | 550 |
| | Total Deaths..... | 2826 | 2146 | 4972 |

| | Deaths. | Males. | Females. | Total. |
|---|---|---|---|---|
| TENASSERIM. | Moulmein ... ..... ..... | 626 | 364 | 990 |
| | Tavoy ..... ..... ..... | 150 | 123 | 273 |
| | Mergui ..... ..... ..... | 152 | 96 | 248 |
| | Shoay-gheen ..... ..... | 83 | 116 | 199 |
| | Total Deaths..... | 1011 | 699 | 1710 |
| ARRACAN. | Akyab ..... ..... ..... | 265 | 265 | 530 |
| | Kyouk Phyoo ..... ..... | 51 | 30 | 81 |
| | Sandoway... ..... ..... | 28 | 30 | 58 |
| | Total Deaths..... | 344 | 325 | 669 |
| | | | Grand Total..... | 7351 |

The annual mortality therefore of the large towns in the three Divisions of this Province for the year just ended was as follows:—

| | |
|---|---|
| Pegu ..... ..... ..... ..... | 4972 |
| Moulmein ..... ..... ..... | 1710 |
| Arracan ... ..... ..... ..... | 669 |
| Total ..... | 7351 |

The Births during the same period were

| | |
|---|---|
| Pegu ..... ..... ..... ..... | 5997 |
| Moulmein ..... ..... ..... | 1909 |
| Arracan ... ..... ..... ..... | 868 |
| Total ..... | 8774 |

Thus in the twelve months there was an increase of 1423 Births over Deaths. The males save in three instances predominating.

The ratio of Births on 1000 of the estimated population of each of the 17 towns stands thus:—

PEGU DIVISION.

| | ESTIMATED POPULATION. | BIRTHS. | RATIO PER 1000 |
|---|---|---|---|
| Rangoon ... ... ... ... ... | 71189 | 1543 | 21. 6 |
| Thayetmyo ... ... ... ... ... | 8000 | 318 | 39.75 |
| Prome ... ... ... ... ... | 23420 | 1180 | 50.30 |
| Shoaydoung ... ... ... .. ... | 10385 | 595 | 57.20 |
| Myanoung ... ... ... ... ... | 5598 | 201 | 35.80 |
| Kyanging ... ... ... ... ... | 7661 | 204 | 26.60 |
| Henthadah ... ... ... ... ... | 14320 | 613 | 42.80 |
| Zaloon ... ... ... ... ... | 3457 | 209 | 60.40 |
| Toungoo ... ... ... ... ... | 9648 | 238 | 24.60 |
| Bassein ... ... ... ... ... | 16079 | 896 | 55.70 |

TENASSERIM DIVISION.

| | | | |
|---|---|---|---|
| Moulmein ... ... ... ... ... | 65500 | 1023 | 15.60 |
| Tavoy ... ... ... ... ... | 14506 | 407 | 28. |
| Mergui ... ... ... ... ... | not given. | 370 | |
| Shoaygheen ... ... ... ... ... | 7688 | 109 | 14.10 |

ARRACAN DIVISION.

| | | | |
|---|---|---|---|
| Akyab ... ... ... ... ... | 15536 | 667 | 42.90 |
| Kyoukphyoo ... ... ... ... ... | 3590 | 93 | 25.80 |
| Sandoway ... ... ... ... ... | 2163 | 108 | 49.90 |

The ratio of deaths to 1000 of population was therefore:—

PEGU DIVISION.

| | DEATHS. | |
|---|---|---|
| Rangoon ... ... ... ... ... ... | 1593 | 22.30 |
| Thayetmyo ... ... ... ... ... ... | 223 | 27.80 |
| Prome ... ... ... ... ... ... ... | 1162 | 49.60 |
| Shoaydoung ... ... ... ... ... ... | 316 | 30.40 |
| Myanoung ... ... ... ... ... ... | 121 | 21.60 |
| Kyanging ... ... ... ... ... ... | 161 | 21. |
| Henthadah ... ... ... ... ... ... | 425 | 29.70 |
| Zaloon ... ... ... ... ... ... ... | 146 | 42.20 |
| Toungoo ... ... ... ... ... ... | 275 | 28.60 |
| Bassein ... ... ... ... ... ... ... | 550 | 31.20 |

TENASSERIM DIVISION.

| | | |
|---|---|---|
| Moulmein ... ... ... ... ... ... | 990 | 15.50 |
| Tavoy ... ... ... ... ... ... ... | 273 | 18. |
| Mergui ... ... ... ... ... ... ... | 248 | |
| Shoaygheen ... ... ... ... ... ... | 199 | 25.80 |

ARRACAN DIVISION.

| | | |
|---|---|---|
| Akyab ... ... ... ... ... ... ... | 530 | 34.10 |
| Kyoukphyoo ... ... ... ... ... ... | 81 | 22.30 |
| Sandoway ... ... ... ... ... ... | 58 | 26.80 |

It will be readily perceived that as the death rates of Prome, Shoaydoung, Henthadah, Zaloon, Bassein and Akyab have increased so have the Birth rates. These facts as shewn in the present returns, I am unable to explain. It has always been supposed that in a prosperous country with an improved mortality, the Birth rate increases in a due ratio to the healthfulness of its people. We do not find this to be the case at any time in this country. I am aware that lately this very subject has been discussed in England, the same facts having been observed in Europe. It was stated that the healthier the inhabitants of a country became (as shewn by its small and decreasing death rate) the smaller also the birth rate would be found to be, and "vice versâ." The subject no doubt is a novel one and the necessary data for forming an opinion is wanting. I am not prepared therefore to discard the figures given for Prome and the towns I have already mentioned altho' they may not be strictly correct.

The birth rates for Rangoon, Maulmain and Shoaygheen are evidently untrustworthy.

Excluding Moulmein and Tavoy the death rates for the remaining towns must be accepted as reasonably accurate.

The conclusions from the above figures are that the large towns save Moulmein are more unhealthy than the

hamlets, but by no means so much so as might have been anticipated; that the greater the number of deaths the greater the number of births, and vice versâ.

The progress which has been made in our system of registration, is on the whole satisfactory. The machinery employed is accused generally as faulty. Our expectations may not have been realized in respect of accuracy, but it is needless to add that the introduction of so novel a change among a rude people without exciting suspicion is a subject of congratulation, however much we may regret that the system is not immediately perfect.

## RANGOON

The Civil Surgeon thinks the Birth rate too low 2. 1. It is less than the death rate 2. 2. He thinks that, registration should now be made compulsory.

## THAYETMYO

Dr. Miller's report is meager in the extreme. He says that "the total number of births registered has been 318 compared with last years' return which shewed the number as 296, there has been a large increase."

The large increase being 22. Again, "the number of deaths registered has been 223 compared with last years return it will shew a great decrease in the number of deaths which was 244." The "great decrease" being 21 Thus the wonderful improvement in the Births and Deaths in Thayetmyoo amounts to an increase on the population of one individual.

## PROME.

It is stated in the Annual Report for this station that "Epidemic and other influences" caused the high death rate. The Chief Miasmotic and Zymotic diseases being Fevers, Dysentery, Atrophy, Cholera and Small-pox.

There was an excess of 18 Births only over deaths in the 12 months.

Dr. MacDonald believes the Returns to be correct but "regrets that a more consistent classification of the diseases or causes of mortality" is not adopted.

## MYANOUNG.

Mr. Paul in medical charge reports that "we have the same number of deaths as in 1866-67, viz: 107" if the 14 fatal cases of cholera be deducted. The Birth rate 3.5 per cent, he considers very satisfactory.

## TOUNGOO

Dr. Parker remarks that the births registered "shew a considerable decrease on the two previous years. The birth being even lower than the death rate." There must have been great neglect in recording the births during the year. He believes both Returns of births and deaths to be inaccurate.

A native doctor has been appointed registrar and it is thought that a "more correct estimate may be arrived at from the current years tables." It is to be hoped so.

## BASSEIN

Dr. Nisbet estimates the population at 16079 he does not think that it has materially altered during the year. The Birth rate was 55 while the death rate was 34 per 1,000 of population.

It is stated that "the year has not been marked by any severe Epidemic." Cholera destroyed 16 persons in the month of December.

The ratio of deaths to population is over 5 per cent and this is very high.

# TENASSERIM DIVISION.

## MOULMEIN

The Birth rate here is 1.56 per cent, and the death, rate 1.55. I cannot accept either as approaching the truth. Dr. Busteed says, "in the regiment which is included in the Return, we have, at all events, an example of deaths unbalanced by any Births." Why was the regiment included? This mistake destroys the value of the returns, as no information as to strength or the number of deaths among the Sepoys is given. Dr. Busteed however doubts the accuracy of the death rate. He is "afraid the 15 per 1,000 is rather below the truth."

The Magistrate, Mr. Macrae, on the other hand, thinks that the "low death rate would indicate the high state of salubrity the town enjoys."

## MERGUI

Dr. Abbey has not stated the population of this station. I cannot therefore calculate the birth and death rates. He remarks however that there has been a slight increase of births and a corresponding decrease in the mortality. Of the 248 deaths no less than 131 died before the age of 10 years, but Dr. Abbey adds "I cannot vouch for the accuracy of the returns supplied me."

## TAVOY

Colonel Faithfull, the Deputy Commissioner, in letter No. 19, records the number of children born during the year as greater by 31 than in the previous year and the deaths less by 25.

"The rates of Births and Deaths to population stand thus."

"Births 28 per 1,000. Deaths 18 per 1,000."

"There has been no Epidemic of any kind and the year has been generally a healthy one, but the hot weather in April carried off a good number of the young children under 5 years of age."

The death-rate 18 per 1,000 of population is too low. It must be incorrect.—

## SHOAY-GHEEN

Mr. Cooner in medical charge believes in the correctness of the returns. He gives the birth rate at 14.17 per 1000; my calculation makes it 14.10. I cannot possibly however believe in such a rate.

Shoay-gheen has been free from Epidemic disease during the 12 months. This is attributed to the improvements which have been made in the drainage and conservancy generally.

Mr. Cooner describes the sanitary state of the town to be good. He adds—"The general state of cleanliness in the station has been carefully attended to and all suggestions regarding sanitary measures have been promptly executed."

# ARRACAN DIVISION.

## AKYAB.

The following note is by Colonel Stevenson, Commissioner of Arracan. "The population of the town is 15536." The births 667, the deaths 539,—or 42.2 per 1000 of births and 34.6 of deaths.

The death rate is high. Of the total number of deaths (539) 218 were from fevers. But the Civil Surgeon observes a very marked improvement in the general health

of the inhabitants of the town. Cholera amongst the European population has been unknown; while the native population shows only *one* by the side of sixty two fatal cases of last year, and 333 of 65-66. Amongst the shipping there has been little or no disease, what did exist was chiefly Diarrhoea and the usual amount of syphilis. There has been no scurvy in any form. There was only one case of Cholera it has been seen amongst 15,386 natives (Europeans are excluded from this statement of the population.) The Civil Surgeon does not appear to mistrust the registers of births and deaths, and I have no reason for supposing that they are not tolerably correct." I concur with Colonel Stevenson in considering the death rate high. It will be seen that my figures do not agree with the Commissioner's. Mine are taken from the returns submitted by the Magistrate, while his are extracted from the Civil Surgeon's Tables. The former gives the total deaths as 530 the latter 539. Which is correct? I am bound to accept the Magistrate's figures.

## SANDOWAY

Colonel Stevenson in forwarding these returns remarks as follows. "The population is shewn at 2136. But this includes some adjacent villages. The births registered are 108, deaths 58. The ratio being nearly 50 and 22 per 1000 respectively. Dr. Pyster says the births are above the average, the deaths about the average. The birth rate is undoubtedly high, and the death rate low for British Burma. The largest number of births was in January thus differing from Captain Plant's theory of marriage in Burma."

Dr. Pyster in letter No. 11, to the address of the Commissioner of Arracan, dated the 10th April, 1868, and which

has been forwarded to me in original, requests that the following alteration may be made in his report. "Ratio of deaths to be 26.81 instead of 22.19 per 1000 of the population"—26'81 is correct.

## KYOUK PHYOO.

Colonel Stevenson remarks that "from Captain Plants figures there cirtainly does appear to be as he states a considerable improvement in the health of the town of Kyouk Phyoo, a town said to contain 3590 inhabitants. But I discredit the returns, a difference of birth rate of 9 per 1,000 (26 against 17) in such a population is incredible." In these remarks I entirely concur.

Captain Plant states that "the largest number of births took place in April and May, and this extraordinary feature, I have noticed in different parts of Burmah, and the cause I think is the greater number of marriages immediately after the assessment and collection of the capitation tax in July and August of each year." I have always looked upon marriage among the Burmese as promiscuous and simply a matter of convenience. Certainly all races are supposed to procreate more readily in the spring than at any other time of the year. Kyouk Phyoo however, may be the exception which proves the rule.

In what way altering the time of collecting the above tax, as recommended by Captain Plant, is to effect the population I cannot exactly see. It matters very little when the children are born so long as they are born. On examining the returns for the whole of British Burmah, I find that the greatest number of births took place in the months of November, December, January and July. The largest number of children were born in December and the smallset in April.

# GENERAL REMARKS.

We judge of the sanitary condition of our towns by the presence or otherwise of Zymotic disease, and this class of ailments has materially effected the high death rates exhibited in the returns.

From the records of the past three years it will be seen that small-pox, cholera and fevers of a low type have either appeared at short intervals as Epidemics, or have become localized in certain towns whose insanitary conditions are well known.

To destroy their infectious properties in such places should be our constant endeavour. To this end we must institute reforms based on the soundest sanitary principles,—no half measures will do.

Epidemic diseases and Zymotics of all classes extend where measures are not adopted to stay their progress. We must therefore do all we can to establish thorough cleanliness in our towns and villages, and disinfect where such diseases occur.

The filling in of swamps and raising of low lying ground, for the healthful extension of our increasing towns and villages, where such is required, drainage and water supply are remarked on by all the Civil Medical Officers in this country, and others who take an interest in the welfare of the people, as our first Sanitary requirements. Much good has already been accomplished in this direction in many places, by the aid of prisoners and much is still being done. The more important structural works however will have to be undertaken by the D. P. W.

Some Medical Officers advise that inoculation should be prohibited by law. This I cannot recommend. The prac-

tice of vaccination in British Burma is in its infancy. When we succeed with it to the extent of affording this people a sure protection at all seasons against the ravages of small pox, it will be time enough to consider the advisability of prohibiting inoculation. At this time when small pox is prevalent pretty generally throughout the country the operation of vaccination is inert.

I have the honor to be,

Sir,

Your most obedient servant,

*Sanitary Commissioner,*
*for British Burma.*

# APPENDIX I.

# PUBLIC HEALTH REPORT.

## For the year 1867-68.

*Rangoon, April 1st,* 1868.

1. The principles of Sanitation have been fully explained in former reports. It is needless therefore to repeat here what is already on record ; I assume that their importance is recognized. To proceed :—The basis on which we must construct all our Sanitary improvements are, a pure and plentiful water supply, efficient drainage, fresh air and ample house accomodation. These primary desiderata are absolutely wanting in the town and suburbs of Rangoon. Superficial drainage for the roads exists but sewerage or even drainage to carry away the excess of rain fall in the blocks has not been provided. I am fully aware that constructing Rangoon out of a swamp was not the work of one day. I remember well the state of this station in 1854; and no one knows better than I do the difficulties to be contended with in constructing a town replete with all requisite sanitary appliances. Before our Engineers could well lay out our present town, the people were down upon them. As soon as one block was laid out and before being filled in and roads made, it was built over. This is still a serious evil in those quarters which especially require raising. The difficulty is to provide building room for the poorer classes.

2. Notwithstanding a scanty labor market and the want of funds, the years work indicates that Sanitary measures have effected an improved hygienic condition of the people.

The force and extent of epidemics and the actual mischief produced by endemics are now more carefully noted and although a high mortality from these preventible causes is apparent, there has been no sudden rise in the death rate; on the contrary, through the past three years, (and as our returns approach nearer to accuracy) the percentage of deaths has not increased in proportion to the augmentation which it is presumed the population of Rangoon has received by immigration.

3. There is a vast difference between the death rates of those localities in Rangoon which have received Sanitary attention and those which have not. The most unhealthy quarters are Yambonquin, Botatoung, the Madrassee quarter and Poozoondoung. In all populations the death rate rises where their increase is confined within fixed limits and these quarters exhibit this evil to perfection.

4. The Sanitary measures adopted in the interests of the public since Rangoon was first occupied by us have borne ample fruit—quite sufficient to encourage us in extending the experiment. It is seldom that cholera finds its way into those portions of the town which have been completely raised and partially drained, and which enjoy the advantage of good water. Many serious diseases also have been by these means made milder in type. Some have disappeared altogether.

5. All serious diseases in Rangoon originate, or at any rate assume serious dimensions in the overcrowded parts of the town proper, and suburbs. There would appear to be no limit to the number of human beings capable of being crammed into the Yambonquin, Botatoung, Madrassee and Poozoondoung quarters.

6. House accommodation for the poor is not extensive enough and therefore this unavoidably forced overcrowding must be followed by a still higher rate of mortality than has hitherto been the case, if additional room for their expansion is not provided. Again there is the almost certainty that serious epidemic disease will be upon us when we are least prepared.

7. Zymotic diseases caused the greatest mortality during the year. Small pox, measles and cholera visited the station. The two former in the shape of Epidemics and the latter confined itself to the outskirts of the town and was sporadic in character. It is now five years since measles appeared among us. Its chief points of attack at the commencement of the outbreak were Kemendyne and Yambonquin. The disease on being traced, was found to have been imported in the latter months of the S. W. Monsoon, apparently from the district. It soon spread over the town. I cannot say that the disease was of a severe type generally. The majority of the fatal cases resulted from exposure during convalescence and improper clothing. Small pox is now endemic. For a time the town would seem to be free from the disease, when it is reintroduced from the district or other source. However, it is evident that in the delta of the Irrawaddy, a sort of battle-door and shuttlecock takes place with the disease between the town of Rangoon and the district villages. The importation of small pox by means of cooly ships and other craft, will doubtless be checked in a great measure by the vigilance of the Health Officer of the Port. This inspection, if properly carried out, together with a more extended system of vaccination than we now possess, will do much as preventive measures in reducing the disease to a minimum of mischief.

8. There is one disease which is gradually obtaining a foothold on this town, and that is Typhus Fever. Every intelligent person knows that this frightfully fatal disease originates in overcrowding, poverty and filth. It is sufficient I hope, to mention this subject to warn all, that if we do not bestir ourselves to improve the sanitary condition of this town we must stand the consequences.

9. Formerly fire swept away a multitude of evils and placed a layer of charcoal over the soil which destroyed all remaining impurities. These visitations were most beneficial to health if not to the pocket. Several years have now elapsed without the occurrence of a fire of any magnitude and filth of all descriptions has increased to a marvelous extent. Slowly but surely we are drifting down hill. Under our very noses there is springing up and flourishing an amount of indescribable abomination with its concomitants "all the ills that flesh is heir to," which must end in sad disaster. To say that the town and suburbs generally are becoming more and more over crowded, filthy and therefore must increase in unhealthiness is simply to speak the truth.

10. Rangoon possesses an Health Officer who reports the results of his daily inspections to the Magistrate, and the machinery placed at the disposal of this latter officer for the purification of the town is composed of two conservancy officers and 40 convicts. It is simply ridiculous to suppose that 40 lazy prisoners can perform the task allotted to them. I venture to say that even if made to work diligently they could not remove a moiety of one day's accumulations from this town in a month.

11. To remedy the evils I have mentioned the first re-

quirements are a properly constituted municipality, and—money.

12. During the year much good has been accomplished both by the conservancy department and the D. P. W. but it is impossible to keep pace with the requirements of this rapidly increasing town with the means now at the disposal of the Government, unless money is forthcoming, to carry out those vast projects, viz: the reclaiming of land, water supply and sewerage. Projects absolutely necessary to the health and prosperity of the inhabitants.

13. A properly constructed slaughter house is urgently required. It should be constructed on the plan adopted at Thayetmyoo.

14. The grave yards are now too near the town. Some steps should be taken to select new sites at a considerable distance from all habitations.

A. J. COWIE, C. S.

*and Health Officer.*

## REPORT ON THE PUBLIC HEALTH OF THAYETMYO.

FOR 1867–68.

A description of the soil and site of Thayetmyo has been furnished in previous reports.

2. I consider Thayetmyo one of the healthiest towns in Burma. I attribute it to its being raised higher than many of the other Towns and situated on a high bank of a river. One great drawback is there being no Public Latrines or conservancy arrangements as yet, the streets are being made very wide and levelled.

3. The drainage is also good, pucka drains are being made in most of the new streets.

4. The new Market is a very fine well ventilated building in a high healthy situation, all Brick with zinc roof and properly ventilated, provisions of every kind are sold there, and it is kept clean.

5. The greater part of the deaths occurred here from fever.

6. There are no public Latrines, they are required very much, as the Townspeople commit nuisance all over the place.

7. The drainage is every day being improved since last report.

8. Conservancy Carts are much wanted to collect the filth and rubbish about the Town.

9. I would strongly recommend a Conservancy Staff to be formed to carry out the necessary work about the Town.

W. MILLER, M. D.

*Civil Surgeon.*

Thayetmyo, 1st April 1868.

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## Brief Report on the Public Health to accompany Civil Surgeon's Report on Thayetmyo, for the year 1867-68.

The town of Thayetmyo throughout the year has been comparatively healthy: Between October and December there was a slight outbreak of Cholera, this first showed itself on 12th October and entirely disappeared by 9th December. The form of cholera was very mild and of those attacked the larger number recovered. Only 19 deaths from this cause occurred.

2. In January small pox showed itself in the town, principally among the children, but the cases have been few and only six deaths, all children, have taken place from small pox. There is a little still about, but it is rapidly disappearing. A Conservancy Establishment is much required; the Chief Commissioner has sanctioned one for the town of Thayetmyo, but they have not yet been engaged, nor carts bought :—delay in purchasing carts for conservancy purposes has occurred from it being necessary to make a reference regarding the sum sanctioned, but the reply to this reference is daily expected and the establishment will then at once be engaged and the carts purchased. The Executive Engineer has been engaged in drawing up a plan for public Latrines, which in due time will be laid before the proper authorities; they are much needed, but I am afraid the expenses for establishments to carry out the dry earth system will be a heavy strain on the Municipal Fund of the town should they eventually be sanctioned.

W. MUNRO,

*Assistant Commissioner.*

THAYETMYO,
Asst. Commr's. Office,
*The* 18*th April* 1868.

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## ANNUAL SANITARY REPORT OF THE CIVIL STATION OF PROME,

FOR THE YEAR ENDING 31ST MARCH, 1868.

1. The most important and remarkable events in a Sanitary point of view, which happened in the Prome District during the past year were the occurrence of out breaks of two well known and formidable diseases, viz: one of small pox which was limited almost entirely to the towns

of Prome and Shoaydoung, and another of cholera which was epidemic throughout the District. Both were fortunately of a very mild type and followed each other consecutively, the former occurring in the dry season, and during the rains, the latter at the close of the rains.

2. Though these visitations were probably independent of atmospheric influences they were preceded and accompanied by marked and unusual changes in the periodocity of the seasons—to wit. A very dry hot season, unusually early rains, and scanty fall, being 30 inches below that of the corresponding period of the previous year, and a peculiar absence of thunder storms, and other electric conditions of the atmosphere.

3. In endeavouring to retrace the progress of these diseases from their original source all I can ascertain is, that the small pox, which was clearly traced to the Quarters of some itinerant Shans in the Naween portion of the town, made its first appearance in January 1867, having been brought, I believe from across the frontier by these people at that season of the year. It proved to be a very mild out-break, and though it continued more or less prevalent for about 7 months only 39 casualities resulted from it. Of these, 2 occurred in February, and 4 in March of the same year, they rose to 10 in April, went down to 6 in May, and rose again to 13 in June after the rains had well set in. There were 3 more casualities from it in July, and 1 in August when it finally disappeared.

It broke out again in the cold weather, and though no deaths have as yet resulted from this fresh outbreak, it is impossible to say how long its virulence may remain latent.

4. Vaccination was pushed on with vigour at the time

of its eruption, and I am informed that not a single case occurred among those who had previously been vaccinated, neither did any cases occur among the prisoners in the Jail, though the disease was prevalent in its vicinity. Now considering the mildness of the epidemic, and its slow spreading tendency, I think there can be little doubt but that inoculation, which is practised exensively by the Burmese in this quarter, was the principal cause of its having lingered so long about the town, and the revival of its dying embers.

5. The spread of cholera on the other hand, appeared to depend upon more subtile and inexplicable causes, having appeared almost simultaneously both at Prome, and Thayetmyo, as well as in some of the larger towns, and villages throughout the district, and extended over a wide tract of country within a few days of its first outbreak.

6. The first casuality from this disease occurred on the 29th of October, and between that date and the 20th of December it swept away 145 of the town population, the greatest number of deaths (10) having occurred on the 13th of November. It was preceded by very sultry and oppressive weather, and an unusually small quantity of rain for that season of the year, which I have no doubt materially contributed to its spread.

7. The principal towns attacked were those on the banks of the Irrawaddy, but whether the productive agent of this result was human intercourse, or the natural progress of the epidemic along the course of the river, I am unable to explain, suffice it to say, that so far as my observations have extended it appears to have travelled from North to South through the district.

8. The total number of deaths which resulted from this human scourge in the town of Prome were 145, and 29 at Shoaydoung, which is probably a heavier mortality than occurred in any other towns throughout the district, in consequence of the trading facilities which exist between them both by land and water, and being favorite havens for the myriads of boats which trade between this Province and Upper Burmah, thereby creating a greater influx of strangers, who it may readily be imagined, act as *foci* for spreading contagion. But since no records have beeen kept except for the towns of Prome and Shoaydoung, I am unable to furnish more precise data than can be gathered from hear-say evidence.

9. An epidemic of measles which first made its appearance among some Coolies engaged in cotton cleaning broke out in February last, but as yet only 12 deaths have resulted from it. These coolies were principally natives of Upper Burmah who come down here annually in search of labor, and must have brought the disease along with them. This is a significant fact coinciding remarkably with the invasion of small pox imported in the same manner just exactly one year previously, which tends to show that our epidemics are not always originated in British Burmah. There were no fairs about here at the time it made its first appearance so that I have not the slightest doubt of the mode in which it was imported.

10. Respecting the Sanitary Condition of the town, I regret to report that notwithstanding the several improvements which have been effected of late years, it is still in a very unsatisfactory condition. The town being lowly situated, built upon a swamp, and hemmed in by a chain of small hills to the southward it is unfavorably situated for

exposure to the prevailing breezes, and sloping gently from the left bank of the Irrawaddy towards the swamp it receives the full force of the direct rays of the sun during the fore part of the day, and the reflected heat from the hills on either side of the river in the afternoon, thus rendering its position in every way favorable for the generation of malaria from which it is never free, though it is more active towards the close of the rains, and in the cold weather than at any other season of the year.

11. The drainage of the town is still more or less defective in as much as that several of the drains open into the swamp which passes through the town instead of opening to a main channel which would at once convey the water from the interior of the town towards the river. The consequence is, that when the swamp is filled up, a most important improvement which is now projected, the course and direction of all those drains must eventually be altered.

12. The most unhealthy portion of the town is the Naween Quarter, situated at its northern extremity. This is probably owing to its being bounded by the swamp above mentioned on the one hand, and a strip of the river bank from which the water recedes annually on the other. A temporary village of brokers huts is built annually at the close of the rains on this strip of alluvial soil for trading purposes, and from the amount of trade done in that horribly fœtid stuff called Ngapee, the locality has become famous for its noxious effluvia of countless varieties, and its influence in favoring the propagation of disease.

It is moreover, situated immediately behind the Jail, the state of the atmosphere in the vicinity of which can readily be imagined. It ought to be entirely done away with, as well as the Sepoys hovels and that lamentably di-

lapidated bazar, west of the Jail. Indeed, no open air bazars should be permitted in the streets, for they are a terrible nuisance from the amount of filth and rubbish that always collect about them. Though scavengers are employed for clearing away the rubbish they rarely perform their work effectively and have no influence whatever, even should they wish it, upon the invisible effluvia so inseparably connected with these public places, where commodities of countless varieties are exposed for sale.

13. Rapid strides have however, been made during the year under review, in improving the appearance of the town. Pucca and large wooden houses have been substituted for many of the old and dilapidated dwellings, streets have been cleared, new roads constructed, and old ones repaired; so that at this rate, Prome may look forward to a hopeful future. New Court houses are also being built upon the best site in the station, and the new Dispensary which was completed in the early part of 1867 and opened to the public in July of the same year is now in a flourishing condition.

14. Three very good and well raised roads lead from the town into the district in different directions, extending respectively Northwards, Southwards and Eastwards. They are repaired annually, and as a general rule, are kept in good order but some of the bridges are miserable specimens of architecture.

15. Regarding the effects of locality and climate upon the public health during the year under review, there is little to record with reference to the former that has not already been stated or reiterated in former reports. The season was an unusually dry one, not less than one half the usual quantity of rain having fallen, and though this

caused a considerable deficit in the rice harvest, I dont suppose that it will amount to an actual scarcity before the next crop can be secured. It is probable, however, that the dryness of the season had something to do with the Cholera epidemic which swept over the district in November last.

16. The town swamp, which is the principal disturber of the public health in Prome has been emitting its invisible and poisonous emanations as usual during the past year. Fevers, diarrhœa, and dysentery have been rife as heretofore, holding sway over the lives of the inhabitants, and gradually thinning their ranks.

If any human means are capable of ameliorating the health of the community of this town, the filling up of the swamp will be more likely to do so than any other, a great undertaking no doubt, but one which, I am glad to hear, is about to be commenced this year, and when completed, will, besides reclaiming a considerable portion of land for building and other useful purpose, work an incalculable amount of benefit upon the health of the inhabitants by removing the great source of malaria from their very doors:

17. I am informed by our Assistant Engineer who has recently taken the level of the town, and to whom the above work has been entrusted, that, when the swamp is filled in, and the back water from the Naween creek is precluded from entering the town, very little if any drainage will be required. This, I have no doubt may turn out to be the case, for taking the annual average rainfall at about 40 inches, it would all either be absorbed or pass off by evaporation soon after the cessation of the rains.

18. The conservancy arrangements of the town are in many respects defective, the cleanliness of bazaar and

habitations are not rigidly enough enforced, and the state of the Burmese cesspools, or privies, might be in a more satisfactory condition. They ought to be compelled either to use dry earth, or to keep them permanently covered over with some impermeable material. Many of these privies are built, or dug immediately behind simple bamboo fences facing the principal thoroughfares, a very objectionable procedure which ought to be prohibited.

19. In other respects, with the exception of a few puddles in the vicinity of wells, the town is, I dare-say, upon the whole, further advanced in a Sanitary point of view than it has ever been before.

20. A destructive fire which was nearly being attended with serious consequences broke out in that portion of the town, South-west of the Shoay Tsan Daw Pagodah on the 17th of March last, and completely demolished about 90 huts, and a phoongyee kyoung. Fortunately there was no breeze of wind at the time, otherwise it might have created an incalculable amount of damage including the destruction of the great pagodah.

21. Prome, as heretofore, will always be liable to accidents of a serious nature by fire so long as the inhabitants are allowed to live in huts composed entirely of bamboo matting, and other inflammable materials, but this is not all, the public health suffers indirectly by residence in these miserable huts or hovels, raised only about 2 feet off the ground regardless of position, the consequence of which is, imperfect shelter from the vicissitudes of climate, and undue exposure to the baneful influences of malaria.

22. The Irrawaddy is the principal source from which the inhabitants obtain their drinking water for at least 6 months out of the year, in consequence of its being consid-

ered purer than that obtainable from the wells in the town and vicinity, but in the rains, it becomes too muddy to be used for any purpose except for bathing. At this season, the inhabitants resort, as a matter of course, to well and tank water which is seldom in a much better condition than that of the river, hence, the popular notion that the drinking water is the cause of the prevalence of diarrhœa in Prome.

23. Another important element towards the maintenance of the public health is the quality of the animal and vegetable food supplied for consumption. During the past year, these have been of a superior description, and, so far as I am aware, no tainted animal food is ever offered for sale in the markets. The slaughter sheds or pits are situated in a jungly spot beyond the precincts of the town, sufficiently removed from human habitations to preclude any fear of the public health being influenced by them.

24. In conclusion, I have only to remark that since I feel convinced malarious influences are the principal causes of the high mortality existing in this town, I do not consider it necessary to dwell at greater length upon the different remedies that should, in my opinion, be adopted, in order to improve the health of the inhabitants, especially since the principal improvement I would suggest, the filling up of the town swamp, is already in contemplation, so that there only remains to be pointed out the necessity of an improvement in the Sanitary and Conservancy arrangements of the town, to render it more favourable to the health of the community.

K. N. MacDONALD,
*Civil Surgeon.*

Prome, 10th April 1868.

# ANNUAL REPORT ON THE HEALTH OF THE PEOPLE OF MYAN-OUNG.

FOR THE YEAR 1867-68.

PUBLIC HEALTH.—Judging from the Registration of deaths, and of the Cases treated at the Dispensary, I am glad to be able to report that, the Health of the Public of Myan-Oung (notwithstanding a few cases of cholera visitation,) during the year just closed has been good.

2. The most sickly period was at the commencement of the S. W. Monsoon, as after the continued heat and drought, the moisture from the commencing rains by effecting decomposition of animal and vegetable substances and giving out noxious exhalations from the soil, has proved a prolific source of diseases of malarious origin.

3. The next period of sickness was at the termination of the monsoon and setting in of the cold season, when fevers of a milder type, rheumatism, derangement of the stomach and bowels commenced and a few cases of cholera (sporadic) happened.

4. The most healthy period during the year has been that embraced between the middle of February and the end of March of 1868, and April and May of 1867. Although the heat, during these months, at times was unbearable, yet probably from the function of the skin being actively at work with comparatively a dry and pure atmosphere the functions of the viscera apparently are evenly balanced and sickness during this period was materially reduced.

5. During the rains diseases of the Respiratory organs were brought on from exposure to wet.

6. Total fall of rain, from April 67 to 31st March 1868, has been 46·800 inches.

7. No epidemic outbreak or any unusual sickness has visited the town and the station of Myan Oung during the year. But cholera made its appearance in isolated cases and a few children had the measles in a mild form.

8. HEALTH OF THE PRISONERS.—The general health of the Prisoners in the Myan Oung Lock-up has been good, with the exception of opium eaters and some of the notorious outlaws, the health of the former class suffered from the effects of the pernicious drug and that of the latter class from exposure to malarious influences. But the men steadily improved under a little management. One death has taken place among the prisoners during the year. The subject of the casualty being a (Burman) dacoit, the prisoner at the time of admission into the Lock-up, on the 24th April 1867, was much reduced in strength, and his health quite broken down from exposure and privation. Stated that he was ill with fever and pain in the sides, for a month or more previous to his capture.

9. He had Hepatic and Splenic complications, in fact the condition of the man scarcely admitted of any hope of his recovery.

10. He was supported by nourishing diet and stimulants freely and frequently given. He died on the 3rd May 1867.

11. The Lock-up has been free from any unusual visitations during the past year.

12. HEALTH OF THE POLICE.—The health of the men at head quarters, during the past year, has been generally good, but the health of those stationed at the out-posts has been indifferent owing to their being more exposed to malarious influences.

13. Generally the men enlisted for the Police are those whose constitutional powers are below par from abuses and privations. A better class, I believe, cannot be got for the small wages allowed to these men.

14. Cholera, unhappily at its appearance, selected these chiefly for its victims and confined itself to the locality occupied by them, carrying away the weak and aged. However, the measures calculated to arrest its spread being actively employed the dire disease was hindered from further progress.

15. The questions may be asked—What was the cause of the disease, and how was it that the disease only confined itself to the Police Lines and those living near by escaped the infection?

16. The exciting cause of the cases may be looked upon as depending on some peculiar influence of a heated atmosphere upon the system generally, already broken down by bad living and overwork. As the atmosphere for several days together before the attack was found to be very oppressive.

17. Another cause, which promoted and heightened the malarious influence, may probably be attributed to the locality occupied by this class of people.

18. The huts of the Policemen are constructed by the side of and run parallel with, the Bund. Some of them are situated scarcely a few yards from it. Running along the course of the Bund on its either side are deep excavations of considerable sizes, made at the time of constructing the Irrawaddy Embankment and these have been left without either being filled up or measures taken to empty them of the water at the periodical rains.

19. The evaporation from these reservoirs is very slow owing to the luxuriant vegetation with which they abound, and the stagnant accumulations with organic matter in a state of decomposition, being actively at work, the stagnant atmosphere of these parts, as it is seldom renewed, becomes thereby loaded with exhalations, given out from these sources, and the addition to this circumstance of the unwholesome air of the ill constructed and badly ventilated huts, has, in all probability, proved another and efficient cause of the disease.

20. CHOLERA VISITATION IN THE DISTRICT.—Cholera prevailed in several parts of the District from the middle of November to that of the month following, but happily in its visitation the dire disease shewed itself in isolated cases. As its appearance was sudden, measures calculated to arrest its progress and exterminate the scourge were actively employed.

21. The disease was brought in from Upper Burma, and the poison imported acting on people generally predisposed by debility, and influenced by the condition of the atmosphere and elevated temperature of the places (especially as it was just after the rains), favored the development of the disease.

22. It appeared in the townships of Kyan-gheen and Yea Gin Meengyee and confined itself chiefly to the banks of the river.

23. MEASURES EMPLOYED.—On hearing that the disease had appeared in the township of Kyan-gheen and Yea-Gin-Meengyee, the former situated on the western and the latter in the eastern bank of the Irrawaddy, medicines, with the following instructions were at once sent to the several officials through the Deputy Commissioner of the District.

"To the Residents of ——————, now that cholera has "broken out among you, just with a firm resolution on the "part of each one, try to combat the common enemy by a "consistent application of the means that experience points "out as efficacious and by which each and every one of you "can best protect his or her threatened life. A bewilder-"ed terror and a grasping at expedients on such an occa-"sion are both hurtful and useless.

"The means proposed are simple and as follows :—

1. "Cleanliness. Remove the filth and rubbish from "underneath your houses and remove these away to a con-"siderable distance and have them buried in deep pits and "cover them with earth.

2. "After the removal of the rubbish &c., keep up "slow fires burning underneath of those houses that are "well raised from the ground, but where the houses are "low, burn fire within the houses in earthen vessels for 2 "or 3 hours daily.

3. "After the fire is removed, sprinkle the flooring of "houses with a mixture of lime and water and strew a mix-"ture of lime and coarsely powdered charcoal underneath "the houses from whence the rubbish, &c. were removed.

"The above measures will tend to rid the atmosphere "surrounding you of impurities and render it pure and "wholesome.

"You are cautioned against drinking much water or "much *drink* of any kind. Against unripe fruits and un-"wholesome vegetables and badly prepared Ngapee, use "dry flesh diet with an extra quantity of salt.

"Take the pills, observing the following instructions. "One pill to be given as soon as possible after the vomit-

" ing or purging or both vomiting and purging have set in,
" with about two mouthfuls of infusion of chillies (prepared
" by macerating in a covered vessel or pot for two hours,
" bruised chillies about a dozen in boiling water 1½ bottles),
" and one mouthful of Brandy or Gin, the latter is prefera-
" ble as it also acts as diuretic.

" Another pill to be given and repeated every ¼ of an
" hour till the vomiting and purging become less frequent,
" and then *one pill* every 4 hours till complete recovery
" takes place.

" The body in the meantime should be kept warm with
" warm dry clothes, and when cramps come on, brisk sham-
" pooing and friction with oil and powdered chillies should
" be employed and persevered in by as many as may be
" present to relieve suffering humanity.

" For children from 6 months to a year old, ¼ of a
" pill and repeated as above.

" For children from 5 years of age and upwards, ½ of a
" a pill and repeated as above.

" No infusion of chillies to be given to children. But a
" small quantity of ginger tea to be given instead accord-
" ing to age.

" The diet of the sick person, ought at first to be
" very mild and nourishing such as rice conjee with or
" without milk, and during convalescence, chicken, boiled
" eggs, milk in small quantity, soft boiled rice and beef *well*
" cooked should be used for several days afterwards, in
" preference to any other kind of food.

*Note.*—" If thirst is very urgent during the attack, cold
" water should not be denied or refused to the patient."

(Sd,) P. GEO. PAUL,
*In Medical Charge.*

24. HEALTH OF THE OFFICERS.—The health of the officers, I am glad to be able to report, has been generally remarkably good, although at times, symptoms of Dyspepsia had to be overcome with a little management.

25. Exercise, whenever practicable, was recommended to be taken regularly and continued without intermission in the cool of the morning and evening.

26. From the nature of the work, I am sorry to remark, the officers (and particularly the Officer in charge of the District) are not able to take that amount of exercise in the open air which is so conducive to health.

27. Exercise to prove beneficial, they were reminded, must be taken in a manner so as to produce a free action of the skin and which will render it salutary, and care also must be taken that the body does not subsequently become chilled, to guard against one of the evil consequences, the sudden throwing back of the circulation upon the internal organs.

28. One of the Officers suffered slightly from congestion of the Liver attended with pyrexia, which soon yielded to a course of treatment and due attention to diet.

P. GEO: PAUL,
*In Medical Charge.*

Myan-Oung, 1st April 1868.

## HEALTH REPORT 1867-68, TOUNGOO.

This Report will necessarily be brief, as it goes over ground already touched upon in the Report on Births and Deaths. The past year records a nearly equal number of deaths to 1866-67, but shews a great falling off in the Births; as this has been noticed in the Report on Births and Deaths, I merely advert to it here.

2. Of the 275 deaths, only 58 have been caused by fever, a reduction of 66 per cent, as compared with 1865-66, and nearly 40 per cent as compared with last year. I am unable to assign a cause for this striking reduction, except in the fact that the inhabitants appear much more ready now to come for medical treatment when attacked with fever than formerly.

3. Dysentry on the other hand was more fatal during the past year than in 1866-67.

4. Bronchitis caused the next number of deaths, and proved especially fatal in July and August the most rainy months.

5. Tetanus is stated to have caused 24 deaths.

6. The other diseases noted do not require special mention. Considering the scanty clothing, exposure to weather, and carelessness in diet on the part of the inhabitants (though there does not appear to be actual privation) it is surprising that the death rate is not even higher, especially as regards infants; indeed I am of opinion the returns only furnish an approximate and very imperfect idea as regards infantile mortality, and a not very reliable one as regards mortality in general, but this I have noted in the Report on Births and Deaths, to which I beg to refer.

CHARLES R. S. PARKER,

*Civil Surgeon.*

Toungoo, April 25th, 1868.

# REPORT UPON PUBLIC HEALTH AT BASSEIN,

FOR THE YEAR ENDING 31ST MARCH 1868,

BY

A. CALLAWAY NISBET,

*Civil Surgeon and ex: officio Health Officer of the Station.*

Forwarded to the Deputy Commissioner of Bassein in reply to his letter No. 61 dated 9th of April 1868.

Compared with the exceptionally heavy visitation of last year, the state of public health may now be considered satisfactory. The recorded deaths from preventable disease are fewer actually and relatively, and the mortality is restricted more notably to the period of infancy. These are sanitary features which, so far as they go, seem to spring from greater freedom from atmospheric impurity, the result perhaps, in some measure, of the Sanitary improvement noted in my last report, and of certain changes for the better which may have been observed amongst the native population.

2. It is satisfactory to note that the part of the native quarters in Athaygyee ward which was burnt down to such an extent as to clear thoroughly a space in the very heart of the Town of many acres in extent, has been rebuilt in a greatly superior style (without any interference on the part of the local authorities) in a manner which reflects credit on the good sense of the inhabitants. The sites of the houses in this station having been well raised and drained, while ventilation has been much better attended to than might have been or was expected.

3. The interest displayed in this direction by the authorities may be said therefore to have borne fruit, notwithstand that the imperative legislation contemplated by them was successfully resisted.

4. The year under review has not been marked by any severe Epidemics—except an outbreak of Asiatic cholera which occurred in December destroying 16 persons in the Town during that month. Sporadic cases have occurred as usual from time to time since that time. In every case the disease was associated with defective water supply and followed the use of unpurified river water. Cases of Choleraic Diarrhœa were frequent during the outbreak, apparently traceable to the same cause, and I have invariably observed that sailors who when hard at work stowing rice at a temperature of 120 F. or there abouts, drink the river water freely if permitted to do so, get diarrhœa and cholera as a matter of course. Unfortunately masters of ships cannot always be made to see the matter in this light, and, as a rule, shirk the trouble of getting other water for their men and many lives are lost annually in consequence.

Epidemics.

Cholera.

5. The local papers reported the appearance of cholera at Rangoon in November, subsequently it appeared at Pantanau and Yangdoon reaching Bassein on the 2nd December where it first made its appearance in a squalid hovel on the banks of a muddy tributary to the river; on the 15th of January it was heard of still further west at Shangween a village some 30 or 40 miles from Bassein, and then its course which had been westerly throughout deviated to the northwards at the foot of the coast range.

6. Only 30 deaths from Cholera have been reported within municipal boundaries up to the end of March, but I have reason to think that the district suffered heavily on the course of its track. But now the disease in its Epidemic form may be said to have ceased.

7. Its *causes* were as usual obscure—I allude to its Epidemic constitution—all we know certainly is, that it was generated to the Eastward and that its ravages were probably assisted by local conditions of an insalubrious character, the result of defective drainage conservancy and water supply.

Causes.

8. The *measures adopted by the local authorities* against the disease were as follows:

Remedial measures adopted.

Prophylactic rules were drawn up in a simple form by myself and 50 copies of them were circulated in the vernacular by order of the Deputy Commissioner.

9. The appointment of two compounders to dispense medicines from house to house with the view to combat the preliminary and probably contagious Diarrhœa.

10. The purification of infected localities by additional conservancy coolies was also recommended for adoption, as well as the compulsory disinfection of the contents of privies.

11. One fact interesting in connection with the question of contagion in cholera, was noted at Talainghyoung where in one house three people died from the disease in the course of a few days, while all the neighbouring houses escaped.

12. The state of health of the prisoners confined in the Bassein *Jail* has during the past year been generally speaking very satisfactory. The prison dietary has been more liberal in the allowances of fish, flesh and oil, than was allowed before, but several deaths occurred notwithstanding from Bereberi, necessitating a still more liberal allowance of these articles and a free use of Gin Punch, Treatment which, combined with Calomel to

Jail.

salivation appeared to be attended with satisfactory results. The disease, which is a very formidable one, did not cease however till the end of the rains and the advent of the cold weather. No cases of Atrophy have occurred in this Jail for several years, not one in fact has made its appearance since oil in specified quantity was ordered by the Commissioner of Pegu, to be administered daily, by my suggestion.

Dispensary.

13. The Bassein *Charitable Dispensary* has risen apparently in public estimation, the number of patients, and the local support voluntarily afforded to it having alike increased.

Vaccination.

14. The *Vaccination* operations of the year have been inconsiderable and unsatisfactory, and it appears to me, that this must ever remain so while they labour under the disadvantage of being employed, only when the fears of the people are excited by the existence of Small Pox in an epidemic form, and where inoculation is invariably and openly practised, often in conjunction with it.

Cattle plague.

15. The extent to which the *Cattle plague* existed in 1867, may be measured pretty accurately by the mortality which resulted from it, few cases unfortunately recovering—not more than 10 per cent I think—when once attacked. 4532 head of cattle perished from it in that year. It appeared to be similar in character to the outbreak which desolated the district in 1865, the chief symptoms of which, as it came under my notice were, shivering, dry but slight heat of skin, nose ears and horns cool, ceasing to ruminate, refusing food. Drooping of the ears, coat rough and unsightly, slight dry hard eruption over the neck and fore quarters. Tongue loaded. Hot and very offensive breath, Diarrhœa with highly offen-

sive stools. Urine very copious, perspiration hurried and laborious. Slight mucus discharge from nares, general drooping and dulness which goes on increasing until the animal cannot rise, while the discharge from the nares gradually becomes more viscid and copious. Stools become slimy and bloodstained, and death preceded by convulsions occurring generally on the 3rd day.

17 The post mortem morbid appearances were the same in nearly all the cases examined (4), that is to say, the mesenteric vessels were throughout distended with dark blood, peritoneal surface of the intestines large and small, conjested over a large surface becoming purplish hue at and about the cœcum and appendix vermiformis. Descending colon and rectum empty and healthy. On slitting the gut from this part upwards, the mucus surface was quite pale as far as the ascending colon, where small abscesses situated between the coats of the bowel were observed filled with a putty like substance of a greenish hue, which was bursting into the gut in several places, ulcerated spots appeared also in the same situation discharging a similar matter which adhered with some tanacity in situ, some of these minute abscesses (for they were all small, none exceeding the size shewn in the diagram marginally depicted) had penetrated both coats, serous and mucous alike and so perforated the bowel. These were very numerous in the appendix vermiformis, and still more numerous relatively, in the cœcal end of the ileum—the whole mucous lining of the gut in this situation being much darkened and thickened by inflammation, while the ileo-cœcal valve was black as with mortification; evidences of which condition of the bowel, together with the minute abscesses above mentioned, occupied at short intervals the whole tract of the small in-

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testines, but less pronounced in character until the examination extended to the situation of what in the human subject would have been Duodenum, where these appearances were again intensified. The stomachs were loaded with undigested food, but no traces of disease or inflammation of them existed. Liver healthy gall-bladder enormously distended with clear limpid bile, a parasite of the shape and size represented in the margin and containing fluid was found in the ductus communis chylydochus in one instance. The bronchi as far as they could be traced and the trachea as far up as the larynx were lined with a false membrane and patches of inflammation in all its stages were always found in the same situation especially on or near the Epiglotis which was sometimes sloughing.

17. These remarks apply to four head of cattle that died from cattle plague in 1865. As they belonged to myself, I had an opportunity of making myself acquainted with the prevailing symptoms of the disease and its morbid appearance with but little trouble. It is familiar to the Burmese of this neighbourhood under the name of Kyana. The cattle were in high condition and their flesh was eagerly consumed by the natives.

Sanitary suggestions

18. I have little to add under this head to what has been urged in previous reports. A proper system of drainage is still our most prominent requirement—much has been done in this direction and some quarters of the town are greatly improved, but still much remains to be done before any marked improvement in the general health of the Town can be looked for, with any degree of confidence.

19. In large tracts of the town improved drainage is the one great requirement. Were the main drains whether

natural or artificial deepened and widened, and the boggy spots filled in with the soil thus obtained, or from any other available sources which are not far to seek, their most insalubrious feature would be at once removed.

20. This is a practicable measure—"a killing of two birds with one stone" as it were, which could be carried out without interfering in an obtrusive manner with popular aspirations, however ignorant or prejudiced. Upon sites so raised and drained buildings might be raised upon any construction, but what would be better, would be to provide by law, without too great or too little consideration for the liberty of the subject, for the proper ventilating lighting and purification of native tenements when massed within narrow limits. The Health Officer should be armed with full powers and should be aided by a Conservancy establishment liberally paid, and he should be encouraged to fulfil his laborious duties firmly and impartially.

Contagious Diseases Act.

21. Is to be brought into operation at all the ports of the Province. Its success will depend mainly on the activity and efficiency of the local Police. Ten deaths are said to have occurred from Syphylis within the year.

A. CALLOWAY NISBET,

*Civil Surgeon Bassein.*

Bassein, 25th April 1868.

Forwarded to the Deputy Commissioner of Bassein as required by his letter No. 61 of the 9th instant, by

His most obedient servant,

A. CALLOWAY NISBET.

25th April 1868.

# REPORT ON THE PUBLIC HEALTH OF MAULMAIN,

DURING THE YEAR 1867-68.

GENERAL HEALTH OF THE TOWN.—The Health of the Moulmein Public during the period under review, has been unprecedently good; in fact I may safely say, that, of the eight years I have held the appointment of Civil Surgeon of Moulmein, the past year has far surpassed any previous one, in point of exemption from ordinary disease, and also in the entire absence of epidemic disease. I can assign no reason for this salubrity, as there has been, apparently, no singularity in the character of the seasons; nor has there been any unusual attention bestowed on the Sanitary condition of the town. On the other hand, owing to the bankrupt state of the Municipal Fund at the commencement of last official year, the appointment of Health Officer, which had been created during the year previous, was abolished, and the services of a Conservancy Gang, which had been in existence for several years, were dispensed with. It is very probable however, that a part of this healthfulness is ascribable to the Sanitary activity which reigned during 1866-67. During that year, many very important Conservancy measures, such as an improved system of slaughter house; regulations regarding burial of dead; cleansing of wells and drains; removal of dung heaps, cess-pools, and decaying vegetation, &c.. &c., fully described in former Health Reports, were completed, and to the influence which the removal of these sources of disease, may have exercised on the general hygienic condition of the town, in providing a healthier diet, and a purer atmosphere, might, a part at least, of this mitigation of the prevalence of disease, be credited.

2. SANITARY IMPROVEMENTS IN THE TOWN.—In addition to the Sanitary recommendations detailed in my report of

last year, the most important of which have remained, from the causes I have already mentioned, in abeyance, I have very little of interest to communicate. Every possible attention has been bestowed on the general cleanliness of the bazars and crowded centres of the town, and at the period of arrival of Immigrants from the East Coast of India, active measures have been taken to prevent disease, of an epidemic, infectious, or contagious character, being conveyed to the town. To effect this a pensioned Dresser, of the Madras establishment, has been stationed at Amherst, with instructions to board every native vessel bound to Moulmein, and to report on its condition. The detention or otherwise of the vessel at Amherst, and the regulations submitted for the examining officers guidance, in the event of disease having been discovered on board, have been fully described in my report of last year. As far as I am aware, not a single case of cholera or any other epidemic disease, has been reported during the year.

3. With the view of checking the diffusion of Syphilitic disease, which if not so generally fatal as small pox or cholera, is the cause of much suffering and misery to hundreds of our native population, I represented in a report submitted on this subject to Government, the urgent necessity that existed for the establishment of a Lock Hospital, and the extension of the contagious disease act to this sea-port. No local action has yet been taken in the matter, but I have every reason to believe, that a special Hospital will soon be provided for the treatment of diseases of this class. That such an institution is required, I think there can be little doubt, if the numerous instances of human beings wandering about the streets mutilated and diseased from these causes are any test of the wide spread nature of the malady. Moreover, if so many are to be seen on the

public highways, suffering from the complaint, how many more must there be, who are either from shame or the severity of their sickness, prevented from quitting their abodes. To the Members of the Mercantile Marine, however, who visit this sea-port, the existence of a contagious disease act would be of even greater importance, than to residents of the place, as the latter have the advantage of access to Medical aid when they require it; whereas the former in all probability contract the disease, a day or two prior to leaving port, and before they can arrive at their destination, and avail themselves of scientific treatment, they have either succumbed to the disease, or their systems have become so saturated with the syphilitic poison, that their future life is one of continued misery and suffering. In my report, on this subject, to Government, in September last, I stated. :1st. That during the last four years 395 vessels, European, had been at anchor in the Maulmain River; 2nd That the number of European seamen composing the crews of these vessels, amounted in the aggregate to 7383; 3rd That out of this number 143 cases of Syphilitic disease were admitted into Hospital, and 133 were under treatment as out-patients. 4th That the total number of days these admitted cases were in Hospital amounted to 2878. 5th. That of the whole, out and in-patients, 194 were suffering from Primary and 82 from Secondary Syphilis :—and lastly that two of these cases died in Hospital, and that the remainder were either completely cured, or were permitted to join their vessels in a convalescent state.

4. The accomodation of Lunatics belonging to the province, has also occupied the attention of Government during the year, and although it was at first determined to establish two Lunatic Asylums, one at Rangoon, and one at Maulmain, a reconsideration of the subject has led to the

conviction, that it would be preferable for many reasons to have one general Lunatic Asylum for all Burma, and that it should be situated in Maulmain, where a pucka building of this nature, which was commenced many years ago, and left in an unfinished state, might at a moderate outlay be rendered serviceable. There are comparatively few Lunatics in British Burma, if the statistics of our Jails, where these unfortunate beings are at present admitted for treatment, may be considered a faithful representation of the extent of the disease. It is probable however, that the idea of a prison, and association with criminals, acts as a deterring agent, and that when a building, having all the appearances of a private dwelling has once been completed, many who have hitherto refrained from availing themselves of treatment for their relations and friends, will be induced to come forward.

Climate of Maulmain during the year.

5. The climate has not differed in any marked manner from previous years. The fall of rain for the season, amounting to 197 8½-10ths inches commenced in April, and terminated in October, as usual. The amount of rain fall though less by 49 6-10ths inches, than that of the preceding year, is a fair average, compared with other years. The largest quantity of rain fell in September, viz: 63 inches, differing in this respect from other years, when the greatest fall took place either in July or August. The following table shows the Thermometric observations for the year:—

| Months. | Mean Maximum. | Mean Medium. | Mean Minimum. | Rain Fall Inches. | Prevailing Winds. |
|---|---|---|---|---|---|
| 1867. | | | | | |
| April ... | 94° | 83° | 74° | 1 7-10ths | S. W. |
| May ... | 93 | 83¾ | 76 | 21 9½-10ths | ,, |
| June ... | 86 | 79 | 74 | 32 4-10ths | ,, |
| July ... | 84 | 78 | 75 | 32 9½-10ths | ,, |
| Aug. ... | 85 | 78 | 74 | 38 7-10ths | ,, |
| Sept. ... | 85 | 77 | 75 | 63 8½-10ths | ,, |
| Oct. ... | 91 | 82 | 76 | 5 7-10ths | ,, |
| Nov. ... | 89 | 79 | 70 | 6-10ths | N. E. |
| Dec. ... | 87 | 77 | 63 | ,, | N. E. & S. W. |
| 1868. | | | | | |
| Jan. ... | 86 | 80 | 67 | ,, | N. E. |
| Feb. ... | 87 | 81 | 75 | ,, | ,, |
| March... | 89 | 83 | 75 | ,, | ,, |

Most prevalent Diseases. Fever.

6. By far the most prevalent and fatal disease throughout the past year, has been fever of a Remittent character, contracted in the malarious districts of the Province, by those whose calling it is to penetrate these unhealthy regions, while in the prosecution of the timber trade. I am not inclined to believe that the large casualty roll, averaging from 36 to 45 per cent of the mortality from all causes, exhibited in the monthly Registration Returns, under the head of Fever, has arisen from any disease of this nature contracted in Maulmain itself, as I know that Malarious fever has no existence here, and, moreover, I am fully aware, that numerous casualties have occurred in the manner I have above stated. It is customary with Timber Traders, to leave Maulmain for the Forests, at the commencement of every monsoon, and to remain out in the jungles until the cessation of the rains. In their train, there is usually a large number of followers, composed principally of young robust Burmans. At the commencement of their labors, and while the rainfall is steady, with little evaporation from the soil, they continue

free from fever, but no sooner does the monsoon commence to slacken, then the malarious poison begins to operate, and it is considered a wonderful occurrence if a single individual of the gang escapes a severe attack of fever. Several die from their disease while in the Forests, but many more return to Maulmain, to linger on for days, or perhaps, months, and ultimately succumb to it. Fever arising either from cold, or dependent on inflammatory disease of the large organs of the body, such as, the Lungs or Liver, has been by no means rare among adults; but as far as I am aware, the mortality from this source has been slight. Among children on the other hand, inflammation of the Lungs with fever, during the north easterly winds has been a very frequent and fatal disease; and with the exception of croup, may, I *think*, be considered the most frequent source of mortality among Burmese children. Unprotected as they are by clothing from the baneful effects of damp and cold, a different result could scarcely be looked for: and it is a matter of surprise to me, that a native child, with the severe ordeal it has to undergo during childhood, ever reaches maturity. As soon as the child has ceased to receive nutriment from the mother's breast, it is allowed to roam in a state of nudity wherever it pleases; and in the way of food, no restriction is placed on its devouring whatever may come in its way.

Diseases of Stomach and Bowels.

7. Second to fever in point of frequency and mortality, stand affections of the Stomach and Bowels, and of these there has been a marked decrease during the year under review. Diarrhœa, and Dysentery, both acute and chronic have been prevalent diseases among those natives of India and Burmese, whose indigent circumstances would not admit of their procuring food, of a healthy and digestible quality; and among the

same class of people also has occurred the comparatively large mortality which appears in the monthly Registration Returns; but among the well-to-do natives, both of the country and of India, bowel affections have not been more frequent than they have been among Europeans.

8. While ascribing the majority of bowel affections to the evil effects of a non-nutritious and irritating quality of food, I at the same time think, that these diseases are frequently generated by impure drinking water: at any rate their increased prevalence at certain seasons of the year, when the water supply is not so abundant as it should be, and when the quality of the water has become deteriorated, from the presence of organic and other impurities, would lead to such an inference.

Syphilitic Diseases.

9. I have already commented on the general prevalence of syphilitic diseases, which are next to fevers, and affections of the bowels, the most important class of maladies, the Civil Surgeon has to contend with. Beyond attending to the cure of these diseases, either in their primary or secondary form, nothing has hitherto been done, and but little substantial good can be effected, until a regular system of surveillance, and inspection of Prostitutes, such as exists in continental cities, is carried out.

Rheumatism.

10. Of Rheumatic diseases there has been a large number attributable to the excessive humidity and vascilating temperature of the climate. The poorer classes of natives of India, who have been unable to provide themselves during the South-west and North-east Monsoons, with warm clothing, and to obtain the necessary shelter from the night air, have been, generally speaking, the victims. Among the Burmese, wealthy natives of India and Europeans, I have not observed any marked prevalence of diseases of this nature.

Other Diseases.

11. Diseases of the Heart and Liver, and Maladies connected with childbearing, have given rise to a slight mortality. There have also been a few casualties from Atrophia, Lung-disease, and Gangrenous Ulcers: but the general prevalence and fatality of these diseases, have been so slight, that the mere mention of their occurrence, is all the comment they appear to me to require.

12. My Report for this year, is, therefore, one which has very little interest attached to it, as I am unable to record the execution of any important sanitary reforms, owing to the unfortunate monetary condition of the Municipal Fund. It is however satisfactory to be able to state, that notwithstanding this drawback, the Public Health has been better, during the period under record, than it has been for years.

(Signed) GEORGE MARR, M. D.
*Civil Surgeon,*
*Maulmain.*

20th March 1868.

Since the 23rd March, the date on which I took over charge of the Civil Duties from Dr. Marr, nothing affecting the public health, of any importance has occurred, to justify my adding any thing to the above report, left on record by Dr. Marr.

WM. W. BUSTEED, M. D.,
*Offg. Civil Surgeon,*
*Maulmain.*

Maulmain,
15th April 1867.

# HEALTH REPORT FOR THE TOWN OF TAVOY, 1867-68.

I have the honor to state that having only been in India one year, and having no means of contrasting my own experience with that of previous years, my report must be, of necessity, a very unsatisfactory one.

2. The town of Tavoy, containing about 14,000 inhabitants, is situated upon an alluvial plain, very little removed above the level of the tidal river: so far as the Northern and Southern portions are concerned, disease is very prevalent, but the middle portion is comparatively healthy.

3. The Northern portion of the town is inhabited chiefly by cultivators of paddy. During the dry season they erect wooden houses, on the land which they have rented from the proprietors, and occupy these houses until their crops are gathered in.

4. These houses, are only built for a temporary purpose, and consequently are very unfitted for the residence of a family, and moreover they are frequently built so far from the raised roadway, that no access to the highway can be obtained, excepting through a morass so deep that they have to convey children across upon their shoulders; I need not state how detrimental to the health of all classes of the community this must be.

5. The Southern part of the town, is even worse. It is inhabited chiefly by fishermen and their families. The fish when caught, either salt water or fresh fish, are brought up to the houses of the people and all operations required for fitting them for the market, are performed inside. All refuse unfit for food, such as the intestines of those to be dried-fish, water used in the preparations of the fish for sale &c., are either poured through the wide spaces between

the bamboos of which the floors are constructed, or are thrown into the small creeks which are so numerous in this part of the town. Excrementatious matter, from those residing here, is also disposed of in the same way, consequently the accumulation of filth of all kinds is no doubt the source of all those diseases of a miasmatic or contagious character, which from the returns appear to be so rife.

6. The central or Western portion in which the Infirmary is situated is in very much better order in a Sanitary point of view, although, even in this, there is much room for improvement. In the main streets the water will remain during the rainy season on the roads for several days, no adequate provision being provided for its drainage to the river. The ground surrounding the Infirmary is usually (to judge from my last years experience) from 6 inches to 12 inches deep in water and as during the summer months cattle &c., are driven upon it in large numbers for the grass which grows there—it may easily be supposed that the exhalations from the surrounding ground are anything but beneficial to those who are in-patients of the Hospital. At the same time people will not bring children during the rainy season in consequence of the difficulty of access.

7. The chief diseases which have occurred are intermittent and other forms of fevers, such as a low form of Typhoid, Dysentery, Diarrhœa, &c, rheumatic affections, and amongst children "marasmus"; these can easily be accounted for by what has been above mentioned.

8. In most parts of the town the drinking water used, is from wells, situated in places where there is a superabundant growth of vegetable matter, the dead leaves and branches are rarely removed, but are allowed to decay, no

precaution being taken to purify the water, beyond allowing the "debris" to subside after it has been taken into the houses.

9. The decaying of vegetable matter alone might not be so fruitful a cause of disease, were the drains or creeks so constructed as to allow a free outlet to the river, but this I regret to say is not the case; during the high tides water will fill the portions of the outlet, nearest to the river, but it loses so much of its power that excepting at full moon it penetrates but a very short distance.

10. There are three latrines in the town, but they are so placed as to be in my opinion worse than useless, two of them are situated so near to the water's edge as to be inaccessible during the rainy season, whilst if used during the hot weather the excrementitious matter accumulates, (no water passing thro' to carry it off) to such an extent that the effluvia on a hot day is almost overpowering, and this, altho' they are only used by a small number of the inhabitants, or visitors to the town.

11. In the Jail the dry earth system has been adopted and so far as I can judge has answered admirably; if some similar arrangement could be adopted for the public latrines, I feel assured great benefit would result.

12. No means are now provided by Government for the cleansing &c, of the Town. I have been given to understand that formerly, there being a large number of convicts in the Jail this duty was performed by them. At present in consequence of all long term prisoners being transferred to Maulmain, those who remain are totally inadequate to perform the duties required.

Conservancy.

13. The main streets of the town appear to be substantially made, the great defect being, as stated above, the

want of a downfall for the water &c., during the rainy season. In consequence of the central portion being so level the water ways are choked up with accumulations of leaves &c., thereby necessarily forcing the water upon the roads, so as to render them in some places almost impassible.

14. With regard to the occupation of the people I may state that so far as I have had means of judging, no deleterious trade is carried on unless "brick making," chiefly carried on by the Natives of India, may be so considered. The Burmese and Chinese who compose by far the largest portion of the population are cultivators of rice, shopkeepers, exporters of fruit, junk-owners &c.

15. As to the arrangements in private houses, it may be stated that ventilation is the only matter to which attention is paid, neither Eurasians, Burmese nor any others appearing to estimate properly, the advantage which would accrue to themselves and their families from a proper system of Hygiene and Sanitary measures, however imperfectly carried out.

16. I will venture to conclude this report with some suggestions bearing reference only to Tavoy, based upon my one year's experience.

17. The medical officer should be "de facto" Sanitary Commissioner with power to enforce his orders. He should have the authority, in the event of any serious contagious disease occurring in the unhealthy parts of the Town, to remove patients from their own homes into a more healthy locality.

18. The resident Engineer should be required to receive orders from the medical officer, with regard to any improvements, but these only to be carried out with the sanction of the Deputy Commissioner.

19. Portions of the Town are so thickly wooded that ventilation is almost impossible, if there is any order regulating this, I should wish to carry it out, if not, I should be glad to see such an order issued, as I am convinced it would be a benefit to the Town, and I think I may venture to say that the value received from the sale of the timber would far more than cover the expenses incurred.

20. There is no record in the Hospital Books of the Reports for the previous year 1866 and 67, had such been the case, I might have been able to furnish a more full and clear statement than I am at present able to do.

JOHN W. T. WHITAKER, M. D.,
*Civil Surgeon,*
*Tavoy,*
*British Burmah.*

April 11th 1868.

## Meteorological Register at the Tavoy General Hospital, for the year 1867 to1868.

| Day of the month. | At sunrise. Barometer. Of Mercury. | Of Wet bulb. | Direction of wind. | At 10 A.M. Barometer. Of Mercury. | Of Wet bulb. | Direction of wind. | At 2 P.M. Barometer. Of Mercury. | Of Wet bulb. | Direction of wind. | At 6 P.M. Barometer. Of Mercury. | Of Wet bulb. | Direction of wind. | Thermometer in sun's rays at 4 P.M. | Rain Gauge for April. In. | Ths. | Rain Gauge for May. In. | Ths. | Rain Gauge for June. In. | Ths. | Rain Gauge for July. In. | Ths. | Rain Gauge for August In. | Ths. | Rain Gauge for Septr. In. | Ths. | Rain Gauge for Octr. In. | Ths. | Rain Gauge for Novr. In. | Ths. | Rain Gauge for Decr. In. | Ths. | TOTAL. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 2 | 5 | 0 | 1 | 0 | 2 | 0 | 0 | |
| 2 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 2½ | 1 | ½ | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 3 | | | | | | | | | | | | | | 0 | 0 | 0 | 2½ | 0 | 6 | 0 | 3 | 0 | 1 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1½ | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 2 | 0 | 1 | 0 | 7½ | 1 | 0 | 0 | 0 | 0 | 0 | |
| 6 | | | | | | | | | | | | | | 0 | 0 | 1 | 3 | 1 | 2 | 0 | 1½ | 0 | ½ | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 5 | 0 | ½ | 0 | 1½ | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8 | | | | | | | | | | | | | | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 3 | 0 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | |
| 9 | | | | | | | | | | | | | | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 3 | 0 | 5 | 2 | 7½ | 0 | 0 | 0 | 0 | 0 | 0 | |
| 10 | | | | | | | | | | | | | | 0 | 0 | 0 | 2½ | 1 | 2½ | 5 | 2½ | 0 | 4½ | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 11 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 7½ | 4 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 12 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 1 | 4 | 4 | 6 | 1 | 7½ | 1 | 7½ | 0 | 0 | 0 | 0 | 0 | 0 | |
| 13 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 2½ | 2 | 3½ | 0 | 9 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 14 | | | | | | | | | | | | | | 0 | 0 | 2 | 2 | 2 | 5 | 2 | ½ | 0 | 7½ | 1 | 7½ | 0 | 0 | 0 | 0 | 0 | 0 | |
| 15 | | | | | | | | | | | | | | 0 | 0 | 0 | 5 | 1 | 0 | 1 | 7½ | 2 | 7½ | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 16 | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 8 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 17 | | | | | | | | | | | | | | 0 | 6 | 0 | 0 | 1 | 7 | 1 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| | | |

# HEALTH REPORT FOR THE TOWN OF MERGUI,

FOR THE YEAR ENDING MARCH 31ST 1868.

Disease is no doubt obviated to a great extent by the advantageous position of the Town which is mainly built on two or three small hills of lateritious sandstone, at the mouth of the Tenasserim river. A very efficient drainage is thus secured.

Drainage.

2. There is but little poverty, and the houses are very generally placed, each on its plot of garden ground. The evils of over crowding are thus provided against.

Over crowding.

Epidemics.

3. Epidemic disease is scarcely known.

4. Malarious fever is endemic, and has been unusually prevalent during the past year, few persons, probably, having escaped its visitation in the remittent or one of the intermittent forms of the disease.

Fever.

5. The provision for Conservancy is, on the whole, satisfactory.

Conservancy.

6. There are four public latrines provided by the municipality, and three others, built by private individuals. The cleanliness of all these is properly attended to.

Latrines.

7. The water supply of Mergui is but indifferent, the water in some of the wells being slightly brackish, and of first rate quality in none. The supply becomes very scanty in the dry weather, though, by going to a greater depth, it is probable that abundance of water might be obtained.

The deepest well is 30 feet deep.

The shallowest is 18 feet deep.

WALTER ABBEY,
*Civil Surgeon.*

Mergui District,
The 1st April 1867.

# HEALTH REPORT OF THE TOWN OF AKYAB,

FOR THE YEAR ENDING 31ST MARCH, 1868.

During the past year much, very much has been done towards improving the Sanitary condition of the town and station of Akyab, and it is gratifying to be able to report with marked success. In the town itself, conservancy arrangements have received the best attention possible, considering the scarcity and high price of labour. One large tank filled with putrid animal and vegetable matter, and the receptacle of every thing obnoxious, has been carefully covered in to the comfort and salubrity of the neighbourhood. The dense jungle at places in the town and surrounding the station has been reduced, so as to allow the rays of the sun and the wind to reach the earth. At first, this met with some opposition, but, upon the inhabitants and owners of the property being convinced of the advantages that would inevitably accrue from it, they at once consented and assisted in the labour. This work was accomplished chiefly by convicts with the understanding, that the trees thrown should become the property of the Jail for firewood, and it was so. The result of this great clearance has borne fruit an hundred-fold. Fevers have been less prevalent, and bowel complaints which were so frequent and persistent from the exhalation of putrid animal and vegetable matter from the surface of the earth, where neither sun nor wind could gain access have almost disappeared in the localities surrounding the station. In the town also disease has diminished; the cases of cholera reported are much less than those of the preceeding years, one death in fact during the twelve months; and amongst Europeans no case has occurred. This is saying a great deal, when we bear in mind, that from February to May, many hundred European sailors visit this port. Amongst

the shipping, during the past year, the sickness and mortality has been greatly reduced, compared with preceeding years. This I think is mainly to be attributed, to my having succeeded in inducing the masters of ships, to compel their men to wash themselves at least once a week, and to forbid as much as possible any but short leave on shore. Amongst the sailors, Syphilis as usual in every form presented itself, and which together with an occasional case of Dysentery and trifling Diarrhœa, may be said to complete the total of the sickness aboard-ship. No case of scurvy has been reported. Syphilis prevails to an alarming extent amongst the women of the town, who resort from all parts to this station, during the rice season, and in spite of our earnest entreaties the masters of the ships will continue to allow their crews ashore one day before sailing. The lamentable result of this, I have already pointed out in a special report.

2. The same difficulty as to scarcity of labour for conservancy purposes still continues, rendering all such duty more or less unsatisfactory, still, the utmost that can be done has been effected.

3. I have also to report a very pleasing change in the appearance of the land on the river bank, Northward of the point. This ground for years, was a source of much anxiety and productive of disease in many forms. It was a large swamp washed twice every twenty four hours, with the rising tide, which left behind refuse not only baneful to health, but so foul and obnoxius, almost to preclude at times the possibility of taking the accustomary evening drive towards the point. This spot has over and over again been brought to the notice of the Sanitary officer, but want of labour has hitherto presented any amelioration

of the evil. During the past year, the Chief Commissioner's attention has been called to the nuisance, and the result is, that convict labour has been brought into use, and the large tract of land above alluded to, has been reclaimed; all coarse jungle, mangrove &c, have been removed, the old sluice gate filled in, a good sea wall of stone ballast run up, and the ground raised some feet, by sand from the sea shore. All this has been effected without one farthing cost to the State up to this time beyond the value of convict labour.

4. The Sudder Bazar in the town still continues in a most unsatisfactory condition. The drains which were repaired only last year, are now again fallen into decay; the washings from the several stalls, hang about and taint the atmosphere; with such a fall towards the river, this ought not to be—it has been represented frequently but without effect.

5. The privies in the Town consisting of three, are in good repair, and seem sufficient for requirements of the town. With reference to the drainage of the town; I have merely to repeat, what was stated last year, viz, that it merits the attention of the authorities. The fall towards the river is considerable and invites more attention.

6. As regards the private privies, there has been no change since last report; they still exist in all localities, tainting the water of the wells in their vicinity, and rendering the houses round and about them offensive and unhealthy.

7. In this Town, there is a decided deficiency of good water, and this deficiency is greatly felt by the Shipping; the only remedy that can prove effective, is that

suggested by Dr. Lees, viz, large reservoirs &c; to that officers report, I would beg to draw attention.

J. M. WHITE,
*Civil Surgeon and Health Officer.*

Town of Akyab,
The 1st April 1868.

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## HEALTH REPORT OF THE TOWN OF KYOUK PHYOO,

FOR THE YEAR 1867 TO 1868.

In laying the report on public health for the year 1867 to 1868, I beg respectfully to state, that, this year has been unusually healthy. Diseases have prevailed as heretofore of all sorts, but they have been of a milder and less destructive variety. Fevers, Rheumatism, &c., maladies incidental to the province have prevailed, but nothing extraordinary. There was no trace of malignancy observable in the character of the sores and ulcers which were received into the Hospital for treatment.

2. In my last report, I had taken the liberty of dwelling on the subject of the water which is used by the people of Aracan. I now beg to state, that I have carefully analysed several of the specimens sent for by me from the neighbouring villages and find, that they are impregnated with a large quantity of impurities such as are detrimental to health. The subject is one which merits attention, and if it can be shewn satisfactorily that, means can be found for the improvement of the climate of jungle districts such as those of Aracan, to the great benefit of the people and as a necessary consequence a great improvement in the revenue and general condition of those districts, I doubt not these will be adopted.

3. It is a positive fact, that, whenever in a jungle district, a clean and a good supply of well water is obtainable

there is a remarkable improvement of the people of the neighbourhood. I would therefore take the liberty of making the following suggestions for the improvement of the wells, &c :—

1st. That all wells, tanks, &c., in the month of May, or before the 4th or 5th of June, when the water is lowest, be cleared out, and all leaves and plants of whatsoever kind growing in or near any receptacle be removed.

2nd. That all trees growing over or near the wells be cut down. These remarks may appear trivial, and it may be supposed that, if really needed, the interest of the peopeople themselves would have taught the natives to take these simple precautions without official orders—but from my long acquaintance with the the apathetic material of which an Aracanese is composed, I am of opinion, that a little urging and compulsion is absolutely necessary—and experience proves, that neither the people, nor the heads of districts would trouble themselves about such matters unless compelled thereto by standing orders, rigidly enforced under the personal supervision of officers in their tours through the country—and my humble opinion is, that the attending, or the non-attending to these unimportant details often constitutes the difference between healthy and unhealthy villages in Aracan.

4. In conclusion, I earnestly and respectfully solicit, that attention may be paid to the above remarks—the sooner they are enforced, the sooner will the health and comfort of the people be ensured.

ALEX. THOMAS,
*In Medical charge,*
*Kyouk-Phyoo.*

31st March, 1868.

# ANNUAL HEALTH REPORT OF THE STATION OF SANDOWAY,

FOR THE YEAR ENDING 31ST MARCH 1868.

The Station of Sandoway was tolerably healthy from the beginning of April up to the middle of September 1867, notwithstanding the great heat which prevailed during that period. The fall of rain which was pretty fair, though less, in comparison with former years, became very scanty during the last week of September and the month of October—the total fall registered during *that short* period having been, In : 3.55, viz : from 22nd up to the end of September 1.45 and during the month of October 2.10—the showers being few and far between and of very short duration and succeeded by a powerful sun causing great and rapid evaporation from the earth's surface. During this period Intermittent and Remittent Fevers of severe form and type prevailed. To this succeeded a severe form of Bronchitis amongst children, and finally in the month of March, Chicken-Pox and Hooping Cough prevailed epidemically.

Sanitary condition of the Town.

2. This is not very satisfactory. Though the streets are clean, heaps of filth, rubbish and cow dung are here and there found accumulated, independent of the decomposing matter found underneath the dwelling houses of the people. The town is under the supervision of the Police and though a delinquent is once in the way punished and cleanliness enforced, yet the recurrence of the evil is certain. The effluvia emanating from the open shallow privies contiguous to the dwelling houses and from certain resorts of the natives are unbearable. A public latrine is a desideratum in this town, with a staff of servants to work it, or it will be a great object gained if the people could be induced to adopt the dry earth system.

3. The town is well drained. Besides the natural facilities Sandoway possesses in point of drainage, it has

many good and large drains. The roads are high and in good repair excepting those in the central part of the town.

4. The Bazaar is in good order and creditably clean. It is superintended by a Goung and a paid servant looks to the cleanliness of it.

5. It is abundant and good, and obtained from wells. The people are, as much as possible, kept away from bathing near the wells from which wholesome drinking supplies are drawn.

Water.

C. E. PYSTER,
*Civil Medical Officer.*

Sandoway,
The 10th April 1868.

# BIRTH AND DEATH REPORTS.

**REPORTS on the RETURNS of BIRTHS and DEATHS in the Town and Suburbs of RANGOON, for the Official year 1867-68.**

The population of the Town and Suburbs of Rangoon is estimated in the present returns at 71,189, composed of as follows, adults 36,853, children 34,336. This exhibits an increase of 1,323, or 1.9 per cent only, on the previous years calculations. The adults in 1866-67 were stated to be 38,962, and the children 30,904, therefore the adults have decreased by 2,109, while the children have increased in number by 3,432, in the past twelve months.

2. I am not informed of the manner in which the above strength of population has been obtained. Is the increase due to natural causes, to immigration, or to both. These are questions which materially affect the inferences to be drawn from the data furnished me, and which accordingly as they are answered in the affirmative or negative, make, this report valuable or mere waste paper.

3. In extract of Chief Commissioner's letter No. 126, dated 18th July 1865, it is stated that, " The Civil Surgeon is not responsible for the correctness of the returns submitted to him by the Magistrate for report." That officer is simply to remark on the figures forwarded to him and nothing else. I shall therefore confine myself to this duty

4. The annual death rate on the total population of 1867-68 was about 2¼ per cent. This considering all things cannot be looked upon as excessive, when the numerous causes at work to destroy life in Rangoon, and especially in the suburbs are remembered. Now of the population, 1593 died and 1543 were born during the year. Thus we have 50 persons less, as the result of the years operations in natural "increase and multiply." This is a most unhappy business, and quite incomprehensible with a death rate of only a fraction over 2 per cent. That the birth rate should have been less than the death rate still more remarkable. But what shall we say of this. Of the 1593 deaths 953 were males and 640 females and of the 1,543 births, 883 were males and 660 females. Hence, we are richer by 20 females in the gross total of population for the year 1867-68. In my report two years ago, I drew attention to the Registration returns, which exhibited one female only as the increase of population for that year. A facetious friend remarked on reading this report. "The world was peopled from one woman." It is to be hoped that the present twenty will take a leaf out of the book of their ancient example.

5. 1,323 is the total increase of population from all causes, save the most natural one, which unfortunately shews a falling off of 50, therefore, 1,273 persons must have moved into this town from elsewhere, or by immigration. This does not say much for the reputed thousands, said to have arrived during the year, from Maulmain and the surrounding districts. The returns would lead us to believe, that whatever exodus took place from neighbouring districts or provinces, the increase to our population has consisted chiefly of the male sex—an hypothesis I cannot accept as reliable.

6. That children are not born to the Burmese in the same ratio as they are to other nations similarly situated, I have held for a long time, and nothing that I have yet seen has shaken me in that opinion. That they die faster than children of other countries possessing a system of registration, under five years of age, is incorrect, if the present documents are trustworthy. Again, it must not be overlooked, that the laboring classes in Rangoon form a large section of the total bulk of the population, and that they are generally single, but the deaths among them is so small, as not materially to effect the returns.

7. The death rate as I have already stated is not excessive, and will compare well with many towns considered healthy in England. The figures too in this respect must be comparatively speaking tolerably correct. It is difficult to conceal a dead body, and the people can have no sort of objection to supply the requisite information when a death takes place. It is otherwise, however, I fear, too often, with a birth, and until we have a better system of registration, I am compelled by the figures before me, to look upon the birth rate for 1867-68, with grave doubts as to its truthfulness.

8. The subject of "prevalent diseases," atmospheric changes, and of health generally, is given in my sanitary report for the year.

9. Fever caused 42 per cent of the total deaths; and cholera, small pox and measles together, 14 per cent. Thus more than half the mortality took place from the chief Zymotic diseases. This speaks badly of our sanitary condition. It is needless to continue this document to a greater length. In conclusion I would recommend a better system of registration than that now in vogue. It must be com-

pulsory. It is a question also for the Chief Commissioner to decide, whether in all cases of death, a certificate should not be furnished by some medical gentleman.

A. J. COWIE, C. S.,

*And Health Officer of Rangoon.*

RANGOON,

*The* 18*th April*, 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town and Suburbs of* RANGOON, *for the year ending* 31*st March* 1868. *Population* 71,189 *Souls.—Adults* 36,853.—*Children* 34,336.

| Months | Sex. | Races. | | | | | | | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Talines. | Karens. | Shans. | Chinese. | Natives of India. | Other Races. | | |
| April 1867 | Males | 30 | 9 | " | " | 5 | 1 | 1 | 77 | |
| | Females | 25 | 3 | " | " | 1 | 1 | 1 | | |
| May " | Males | 43 | 8 | " | " | 6 | 2 | 1 | 94 | |
| | Females | 28 | 4 | " | " | | 1 | 1 | | |
| June " | Males | 48 | 3 | " | " | 4 | 3 | " | 106 | |
| | Females | 41 | 2 | 1 | " | 1 | 3 | " | | |
| July " | Males | 56 | 11 | " | " | 6 | 14 | 2 | 154 | |
| | Females | 52 | 8 | " | " | 2 | 3 | " | | |
| August " | Males | 61 | 5 | " | 2 | 4 | 4 | " | 140 | |
| | Females | 50 | 5 | " | 1 | 3 | 4 | 1 | | |
| September " | Males | 54 | 9 | " | " | 3 | 7 | " | 126 | |
| | Females | 42 | 4 | " | " | 3 | 3 | 1 | | |
| October " | Males | 54 | 3 | " | " | 5 | 4 | 3 | 123 | |
| | Females | 42 | 3 | " | " | 3 | 6 | " | | |
| November " | Males | 71 | 7 | " | " | 5 | 10 | " | 165 | |
| | Females | 57 | 4 | " | " | 8 | 3 | " | | |
| December " | Males | 82 | 10 | " | 1 | 4 | 7 | " | 176 | |
| | Females | 60 | 6 | " | " | " | 6 | " | | |
| Jan. 1868 | Males | 74 | 9 | " | 2 | 2 | 2 | " | 151 | |
| | Females | 55 | 1 | " | " | 2 | 4 | " | | |
| Feb. " | Males | 54 | 1 | " | 1 | 1 | 4 | " | 107 | |
| | Females | 38 | 6 | " | 1 | 1 | " | " | | |
| March " | Males | 56 | 4 | " | " | 2 | 2 | 1 | 124 | |
| | Females | 51 | 4 | " | " | 2 | 1 | 1 | | |

A. G. DUFF, MAJOR.

*Magistrate,*

RANGOON,
MAGISTRATE'S OFFICE,
*The 3rd April*, 1868.

## Form B.

*Registration Return of* DEATHS *in the Town and Suburbs of* RANGOON, *for the year ending* 31*st March* 1868. *Population* 71,189 *Souls.—Adults* 36,853.—*Children* 34,336.

| Months. | Sex. | Races. Burmese | Talines | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 23 | 7 | " | " | 2 | 7 | " | 64 | |
| | Females | 20 | 4 | " | " | " | 1 | " | | |
| May " | Males | 37 | 4 | " | " | 2 | 3 | " | 78 | |
| | Females | 25 | 7 | " | " | " | " | " | | |
| June " | Males | 40 | 8 | " | 1 | 1 | 1 | 1 | 95 | |
| | Females | 37 | 4 | " | " | " | 2 | " | | |
| July " | Males | 73 | 6 | " | 1 | 5 | 7 | " | 143 | |
| | Females | 34 | 5 | " | 3 | 3 | 6 | " | | |
| August " | Males | 54 | 9 | " | 2 | 8 | 8 | " | 123 | |
| | Females | 31 | 4 | " | 1 | " | 5 | 1 | | |
| September " | Males | 47 | 7 | " | 2 | 4 | 6 | " | 111 | |
| | Females | 37 | 6 | " | 1 | " | 1 | " | | |
| October " | Males | 58 | 4 | " | 3 | 2 | 9 | " | 112 | |
| | Females | 28 | 3 | " | 2 | " | 3 | " | | |
| November " | Males | 76 | 8 | " | " | 6 | 18 | " | 172 | |
| | Females | 57 | 4 | " | " | 1 | 1 | 1 | | |
| December " | Males | 90 | 11 | " | 2 | 4 | 25 | 1 | 231 | |
| | Females | 77 | 8 | " | 1 | 5 | 7 | " | | |
| January 1868 | Males | 71 | 7 | " | 1 | 2 | 15 | 3 | 176 | |
| | Females | 71 | 2 | " | 1 | 1 | " | 1 | | |
| February " | Males | 51 | 4 | " | " | 5 | 10 | 1 | 134 | |
| | Females | 49 | 9 | " | " | " | 5 | " | | |
| March " | Males | 73 | 6 | " | " | 1 | 8 | 1 | 154 | |
| | Females | 53 | 5 | " | 1 | " | 5 | 1 | | |

A. G. DUFF, Major,
*Magistrate.*

RANGOON,
Magistrate's Office,
*The 3rd April* 1868,

## Form C.

*Return showing the supposed or ascertained causes of* DEATHS *among the several Races in* BRITISH BURMA *during the year ending* 31*st March* 1868, *Population* 71,189 *souls—adults* 36883*—children* 34336.

| Nature of Disease. | Burmese. | | | Talines. | | | Karens. | | | Shans. | | | Chinese | | | Native of India. | | | Other Races | | | Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Fevers ... ... | 326 | 167 | 493 | 42 | 31 | 73 | ,, | ,, | ,, | 8 | 6 | 14 | 28 | 1 | 29 | 64 | 11 | 75 | ,, | ,, | ,, | 468 | 216 | 684 | |
| Cholera ... ... | 6 | 4 | 10 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 6 | ,, | 6 | ,, | ,, | ,, | 13 | 4 | 17 | |
| Small Pox ... ... | 22 | 15 | 37 | 3 | ,, | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 10 | 5 | 15 | ,, | 1 | 1 | 35 | 21 | 56 | |
| Measles ... ... | 64 | 69 | 133 | 7 | 8 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 4 | 7 | 2 | ,, | 2 | 1 | ,, | 1 | 77 | 81 | 158 | |
| Dysentry ... ... | 20 | 15 | 35 | 2 | 4 | 6 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 6 | 3 | 9 | ,, | ,, | ,, | 29 | 23 | 52 | |
| Diarrhœa ... ... | 9 | 5 | 14 | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | ,, | ,, | ,, | 11 | 7 | 18 | |
| Convulsions ... ... | 129 | 71 | 200 | 15 | 2 | 17 | ,, | ,, | ,, | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 4 | 6 | 1 | ,, | 1 | 151 | 79 | 230 | |
| Disease of chest and lungs ... | 5 | 5 | 10 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | ,, | ,, | ,, | 8 | 5 | 13 | |
| Child birth ... ... | ,, | 73 | 73 | ,, | 5 | 5 | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | 4 | 4 | ,, | 1 | 1 | ,, | 84 | 84 | |
| Still born ... ... | 1 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | 1 | 1 | 2 | ,, | ,, | ,, | 4 | 4 | 8 | |
| Old age ... ... | 68 | 84 | 152 | 6 | 9 | 15 | 1 | ,, | 1 | 2 | 1 | 3 | 2 | 2 | 4 | 8 | 4 | 12 | ,, | 1 | 1 | 87 | 101 | 188 | |
| Accidents ... ... | 8 | ,, | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 9 | 1 | 10 | 1 | ,, | 1 | 20 | 1 | 21 | |
| Other causes ... ... | 35 | 9 | 44 | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 7 | 3 | 10 | 4 | 1 | 5 | 50 | 14 | 64 | |
| Total ... | 693 | 519 | 1212 | 81 | 61 | 142 | 1 | ,, | 1 | 12 | 10 | 22 | 42 | 10 | 52 | 117 | 36 | 153 | 7 | 4 | 11 | 953 | 540 | 1593 | |

Rangoon Magistrate's Office,
The 3rd April 1868.

A. G. DUFF, Major,
*Magistrate.*

## Form D.

*Return sheweng the* DEATHS *at various ages among the several Races in* BRITISH BURMA, *during the year ending* 31*st March* 1868. *Population* 71,189 *Souls.—Adults* 36,853.—*Children* 34,336..

| Ages. | Burmese. | | | Talines. | | | Karens | | | Shans. | | | Chinese. | | | N. of India. | | | Other Races. | | | Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Female, | Total. | |
| Still born ... ... ... | 1 | 2 | 3 | " | " | " | " | " | " | " | " | " | 2 | 1 | 3 | 1 | 1 | 2 | " | " | " | 4 | 4 | 8 | |
| Under 1 month ... ... | 17 | 5 | 22 | 2 | " | 2 | " | " | " | " | " | " | " | 1 | 1 | " | 1 | 1 | " | 1 | 1 | 19 | 8 | 27 | |
| do. 6 months ... ... | 39 | 22 | 61 | 3 | " | 3 | " | " | " | 2 | " | 2 | " | 1 | 1 | " | 2 | 2 | 1 | " | 1 | 45 | 25 | 70 | |
| do. 1 year ... ... | 26 | 13 | 39 | 4 | " | 4 | " | " | " | " | " | " | 2 | 1 | 3 | 1 | " | 1 | 2 | " | 2 | 35 | 14 | 49 | |
| 1 to 5 " ... ... | 181 | 138 | 319 | 25 | 22 | 47 | " | " | " | 5 | 2 | 7 | 5 | 4 | 9 | 4 | 6 | 10 | 1 | " | 1 | 221 | 172 | 393 | |
| 5 to 10 " ... ... | 51 | 38 | 89 | 5 | 6 | 11 | " | " | " | " | 1 | 1 | 2 | " | 2 | 3 | 2 | 5 | " | " | " | 61 | 47 | 108 | |
| 10 to 15 " ... ... | 17 | 15 | 32 | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | 2 | 1 | 3 | " | " | " | 20 | 17 | 37 | |
| 15 to 20 " ... ... | 28 | 30 | 58 | 3 | 1 | 4 | " | " | " | " | " | " | 3 | " | 3 | 9 | 4 | 13 | " | " | " | 43 | 35 | 78 | |
| 20 to 25 " ... ... | 34 | 30 | 64 | 1 | 6 | 7 | " | " | " | " | 2 | 2 | 1 | " | 1 | 18 | 2 | 20 | " | " | " | 54 | 40 | 94 | |
| 25 to 30 " ... ... | 68 | 41 | 109 | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 22 | 9 | 31 | " | 1 | 1 | 91 | 51 | 142 | |
| 30 to 35 " ... ... | 33 | 23 | 56 | 3 | 1 | 4 | " | " | " | " | 1 | 1 | 5 | " | 5 | 14 | 1 | 15 | 1 | 1 | 2 | 56 | 27 | 83 | |
| 35 to 40 " ... ... | 40 | 23 | 63 | 8 | 2 | 10 | " | " | " | " | 1 | 1 | 7 | " | 7 | 16 | " | 16 | " | " | " | 71 | 26 | 97 | |
| 40 to 45 " ... ... | 13 | 10 | 23 | 2 | 1 | 3 | " | " | " | " | " | " | 6 | " | 6 | 7 | 1 | 8 | 1 | " | 1 | 29 | 12 | 41 | |
| 45 to 50 " ... ... | 29 | 18 | 47 | 3 | 2 | 5 | " | " | " | 1 | 1 | 2 | 3 | " | 3 | 2 | 1 | 3 | " | " | " | 38 | 22 | 60 | |
| 50 to 55 " ... ... | 5 | 5 | 10 | 3 | 2 | 5 | " | " | " | 3 | " | 3 | 2 | 1 | 3 | 1 | " | 1 | " | " | " | 14 | 8 | 22 | |
| 55 to 60 " ... ... | 39 | 22 | 61 | 9 | 4 | 13 | " | " | " | " | " | " | 2 | " | 2 | 9 | 2 | 11 | 1 | " | 1 | 60 | 28 | 88 | |
| 60 to 65 " ... ... | 10 | 16 | 26 | 4 | 5 | 9 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 15 | 21 | 36 | |
| 65 to 70 " ... ... | 37 | 29 | 66 | 2 | 2 | 4 | " | " | " | " | " | " | 1 | " | 1 | 6 | 3 | 9 | " | " | " | 46 | 34 | 80 | |
| 70 and upwards ... ... | 25 | 39 | 64 | 2 | 6 | 8 | 1 | " | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | " | 1 | " | 1 | 1 | 31 | 49 | 80 | |
| Total ... | 693 | 519 | 1212 | 81 | 61 | 142 | 1 | " | 1 | 12 | 10 | 22 | 42 | 10 | 52 | 117 | 36 | 153 | 7 | 4 | 11 | 953 | 640 | 1593 | |

RANGOON MAGISTRATE'S OFFICE,
The 3rd April 1868.

A. G. DUFF, MAJOR,
*Magistrate.*

## REPORT on the RETURN of BIRTHS and DEATHS for the TOWN of THAYETMYO for 1867 and 68.

The total number of Births registered has been 318, compared with last year's return which shewed the number as 296 there has been a large increase.

2. The number of deaths registered has been 223, compared with last year's return it will shew a great decrease in the number of deaths which was 244.

3. Fever appears to be the principal fatal desease they suffer from; they generally don't come for treatment until they are nearly exhausted from the disease, and have tried various Burmese remedies without benefit.

| | | | |
|---|---|---|---|
| Deaths from Cholera | .. | | 19 |
| Fmall pox | .. | .. | 3 |
| Fevers | .. | .. | 60 |
| Old age | .. | .. | 27 |
| Infantile | .. | .. | 57 |

3. This will shew at once that fever carried off more than either Small-pox or Cholera.

J. MILLER, M. D.,
*Civil Surgeon.*

Thayetmyo, 24th April 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* THAYETMYO, *for the year ending* 31*st March* 1868. *Population* 8,906 *Souls.*

| Months | Sex. | Races. Burmese | English. | Anglo Burmese | Indio Burmese | Chin Burmese | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 11 | " | " | " | " | 24 | |
| | Females ... | 10 | " | " | 2 | 1 | | |
| May " | Males ... | 10 | " | " | 1 | " | 25 | |
| | Females ... | 13 | " | " | 1 | " | | |
| June " | Males ... | 11 | " | " | 2 | " | 28 | |
| | Females ... | 14 | " | " | " | 1 | | |
| July " | Males ... | 18 | " | " | " | " | 32 | |
| | Females ... | 11 | " | 1 | 2 | " | | |
| August " | Males ... | 10 | " | " | 1 | " | 27 | |
| | Females ... | 13 | " | 2 | 1 | " | | |
| September " | Males ... | 13 | " | " | " | " | 25 | |
| | Females ... | 11 | " | " | " | 1 | | |
| October " | Males ... | 12 | " | " | 1 | 2 | 23 | |
| | Females ... | 7 | " | " | 1 | " | | |
| November " | Males ... | 16 | " | " | 1 | " | 28 | |
| | Females ... | 9 | 1 | " | 1 | " | | |
| December " | Males ... | 12 | 1 | " | 2 | " | 26 | |
| | Females ... | 9 | " | " | 2 | " | | |
| Jan. 1868 | Males ... | 17 | " | " | 1 | " | 29 | |
| | Females ... | 9 | " | " | 2 | " | | |
| Feb. " | Males ... | 11 | " | " | 1 | " | 30 | |
| | Females ... | 16 | " | 1 | 1 | " | | |
| March " | Males ... | 9 | " | " | 3 | " | 21 | |
| | Females ... | 8 | " | " | 1 | " | | |

THAYETMYO,
ASTT. COMMISSIONER'S OFFICE,
The 23rd April, 1868.

J. MILER, M D.,
*Civil Surgeon.*

W. MUNRO,
*Assistant Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* THAYETMYO, *for the year ending* 31*st March* 1868. *Population* 8,906 *Souls.*

| Months. | Sex. | Races. Burmese | English | Mussel-man | Hindoo | Madras see | Surattee | Siamese | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 7 | " | 1 | " | " | " | " | 13 | |
| | Females ... | 5 | " | " | " | " | " | " | | |
| May " | Males ... | 7 | 1 | 1 | " | " | " | " | 15 | |
| | Females ... | 6 | " | " | " | " | " | " | | |
| June " | Males ... | 8 | " | 1 | " | " | " | " | 17 | |
| | Females ... | 8 | " | " | " | " | " | " | | |
| July " | Males ... | 14 | " | " | 3 | " | " | " | 27 | |
| | Females ... | 10 | " | " | " | " | " | " | | |
| August " | Males ... | 14 | " | " | " | " | " | " | 28 | |
| | Females ... | 14 | " | " | " | " | " | " | | |
| September " | Males ... | 7 | " | 2 | 1 | " | " | " | 21 | |
| | Females ... | 11 | " | " | " | " | " | " | | |
| October " | Males ... | 11 | " | " | 1 | " | " | " | 26 | |
| | Females ... | 12 | " | " | " | 2 | " | " | | |
| November " | Males ... | 13 | " | " | 2 | " | " | " | 25 | |
| | Females ... | 10 | " | " | " | " | " | " | | |
| December " | Males ... | 9 | " | " | " | 1 | 1 | " | 15 | |
| | Females ... | 4 | " | " | " | " | " | " | | |
| January 1868 | Males ... | 6 | " | " | " | " | " | " | 11 | |
| | Females ... | 5 | " | " | " | " | " | " | | |
| February " | Males ... | 4 | " | " | " | 1 | " | 1 | 12 | |
| | Females ... | 6 | " | " | " | " | " | " | | |
| March " | Males ... | 9 | " | " | " | " | " | " | 13 | |
| | Females ... | 4 | " | " | " | " | " | " | | |

W. MUNRO,
*Assistant Commissioner.*

THAYETMYO,
ASST. COMMISSIONER'S OFFICE,
The 23rd April 1868.

J. MILLER, M. D.,
*Civil Surgeon.*

**Form C.** *Return showing the supposed and ascertained cause of* DEATHS *among the several Races at* THAYETMYO *town for the year ending 31st March* 1868.

| Causes. | Burmese. | | | English. | | | Muselman | | | Hindoo | | | Madrasee. | | | Surattee | | | Siamese | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Fevers ... ... | 34 | 21 | 55 | ,, | ,, | ,, | 2 | ,, | 2 | 1 | ,, | 1 | 1 | ,, | 1 | 1 | ,, | 1 | ,, | ,, | ,, | 39 | 21 | 60 | |
| Puerperal fever or Atrophy &c. | ,, | 9 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 9 | |
| Infantile Disease ... | 31 | 26 | 57 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 31 | 26 | 57 | |
| Old age ... ... | 11 | 14 | 25 | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 13 | 14 | 27 | |
| Cholera ... ... | 6 | 9 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 11 | 19 | |
| Rheumatism ... ... | 4 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | ,, | 4 | |
| Small Pox ... ... | 3 | 5 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 5 | 8 | |
| Syphilis ... ... | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | |
| Gastritis ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Splenitis ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Tetanus ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Concussio cerebri ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Serpentis ... ... | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | |
| Vulnus Puncturum ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Death by drowning ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | |
| Anasarca ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Dysentery ... ... | 2 | 4 | 6 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 4 | 7 | |
| Applexia ... ... | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Vulnus Sclopitorum ... | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 3 | ,, | 3 | |
| Asthma ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Ambustio ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Still born ... ... | 8 | 3 | 11 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Total ... | 109 | 95 | 204 | 1 | ,, | 1 | 5 | ,, | 5 | 7 | ,, | 7 | 2 | 2 | 4 | 1 | ,, | 1 | 1 | ,, | 1 | 126 | 97 | 223 | |

THAYETMYO ASST. COMM'S. OFFICE,
The 23rd April, 1868.

J. MILLER, M. D.,
*Civil Surgeon.*

W. MUNRO,
*Assistant Commissioner.*

## Form D.

*Return sheweng the* DEATHS *at various ages among the several Races in* THAYETMYO, *during the year ending* 31*st March* 1868.

| Ages. | Burmese. | | | English. | | | Muselmán | | | Hindoo. | | | Madrasee. | | | Surattee. | | | Siamese. | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Female, | Total. | |
| Still born ... ... ... | 8 | 3 | 11 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 3 | 11 | |
| Under 1 month ... ... | 8 | 6 | 14 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 6 | 14 | |
| do. 6 months ... ... | 9 | 6 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 6 | 15 | |
| do. 1 year ... ... | 8 | 7 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 7 | 15 | |
| 1 to 5 ,, ... ... | 24 | 25 | 49 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 24 | 25 | 49 | |
| 5 to 10 ,, ... ... | 3 | 4 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 4 | 7 | |
| 10 to 15 ,, ... ... | 2 | 2 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | 4 | |
| 15 to 20 ,, ... ... | ,, | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | |
| 20 to 25 ,, ... ... | 5 | 5 | 10 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 7 | 14 | |
| 25 to 30 ,, ... ... | 10 | 2 | 12 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | 13 | 2 | 15 | |
| 30 to 35 ,, ... ... | 3 | 2 | 5 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | 2 | 7 | |
| 35 to 40 ,, ... ... | 8 | 4 | 12 | 1 | ,, | 1 | ,, | ,, | ,, | 4 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 13 | 4 | 17 | |
| 40 to 45 ,, ... ... | 2 | 4 | 6 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 4 | 7 | |
| 45 to 50 ,, ... ... | 4 | 3 | 7 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | 3 | 8 | |
| 50 to 55 ,, ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | |
| 55 to 60 ,, ... ... | 2 | 4 | 6 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 4 | 7 | |
| 60 to 65 ,, ... ... | 4 | 2 | 6 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 6 | 2 | 8 | |
| 65 to 70 ,, ... ... | 3 | 5 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 5 | 8 | |
| 70 and upwards ... ... | 4 | 8 | 12 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 8 | 12 | |
| Total ... | 109 | 95 | 204 | 1 | ,, | 1 | 5 | ,, | 5 | 7 | ,, | 7 | 2 | 2 | 4 | 1. | ,, | 1 | 1 | ,, | 1 | 126 | 97 | 223 | |

THAYETMYO ASST. COMR'E'S. OFFICE,
The 23rd April 1868.

J. MILLER, M. D.,
*Civil Surgeon.*

W. MUNRO,
*Assistant Commissioner.*

**REPORT on the REGISTRATION of BIRTHS and DEATHS in the Towns of PROME and SHOAYDOUNG for the year ending 31st March 1868.**

In forwarding my Annual Returns of births and deaths for the Official year just ended I have to report that owing to epidemic and other influences, the death rate during the past has considerably exceded that of the previous year, while the births remain nearly equal.

2. It will be observed by the Returns for Prome that the present population is put down at 23,420 souls, and that the number of births and deaths respectively, during the year under review, amounted to 1,180 and 1,162 showing an excess of 18 births only over deaths. Of the 1,180 births 614 were males and 566 females, giving a proportion of 26 of the former, and 24 of the latter per 1,000 of the population.

3. The deaths on the other hand nearly equalled the births having amounted as already stated to 1162, or 49 per 1000 of the population.

4. The principal Miasmatic, and Zymotic diseases which contributed to this high mortality were fevers, dysentery, atrophy, cholera, and small pox.

5. On referring to the Returns for 1867 I find that the population of Prome on the 31st March of that year was estimated at 22759 souls, and the births and deaths respectively at 1197 and 821, showing an excess of 376 births over deaths, and a proportion of 52 of the former and 36 of the latter per 1000 of the population.

6. The town of Shoaydoung which is only 9 miles distant from Prome, and situated in the vicinity of a swamp on the left bank of the Irrawaddy, invariably exhibits more favorable Returns than Prome. This is remarkable

and though I have no reason to doubt the correctness of the Returns, the difference year after year between both towns is very striking. During the past year the Returns for this town show a population of 10385 souls out of which there were 595 births, and 316 deaths, giving a proportion of 47¼ of the former, and 30⅓ of the latter per 1000 of the population. On the 31st of March of the previous year the results were as follows.

| | |
|---|---|
| Population .... .... | 9500 |
| Births .... .... .... | 566 |
| Deaths.... .... .... | 283 |

7. The mortality in Prome for the year ending 31st March 1867 was 36 per 1000 of the population. During the past year it rose to 49 owing chiefly to the number of casualities that occurred from epidemic diseases.

The greatest mortality occurred in the months of November and May, and the smallest number in January.

8. The mortality among children was as usual very high giving a total of 335 deaths, but since the causes of death under this head are unknown, the statistics except numerically considered, are of very little value.

9. A further reference to the Returns shows that during the year under review there were 145 deaths from Cholera alone, and 33 from Small Pox, both of which diseases occurred in an epidemic form, the former, towards the close of the rains, and the latter during the early part of the year.

10. In my Annual Medical Report for the Zillah and Jail of Prome, submitted in January last, I gave a short description of the origin and spread of these epidemics so far as could be ascertained at the time.

11. Excluding the 190 casualties that occurred from epidemic causes the Returns still show a high death rate, and it now remains to be explained what were the several causes remediable and irremediable, which contributed to maintain so high a mortality among the people throughout the year.

12. Malarious influences were undoubtedly the principal agents in producing this result—the town being lowly situated and built upon a swamp is favorably located for the generation of malaria from which the town is never free, hence, its inhabitants are constantly exposed to the baneful influences of miasmatic diseases.

13. A closer analysis of the results for the past year shows that 194 deaths occurred from fevers; 76 from dysentery, 234 from atrophy, and 6 from diarrhœa, all resulting from different varieties of malaria owing to the unhealthy state and position of the town.

14. The ratio of age to mortality from all causes combined was as follows: Under one year 14½ per cent, from 1 to 5 years—19 per cent, from 10 to 20—6¾ per cent, and above 30 it reached 11 per cent or thereabouts. From this it appears that the highest mortality occurred under 5 years of age, and the smallest number above 10 years.

15. It is much to be regretted that a more consistent classification of the diseases or causes of mortality could not be adopted by the Registrars, such vague statements as "childrens diseases" &c., being totally useless for scientific purposes, and even in the case of fevers, atrophy, and several other diseases it is quite likely that in many instances the real cause of death was something very different from that stated.

16. Mistakes of this nature are of course unavoidable by non-medical persons such as we have got under the present system of Registration, hence the value of the statistics is considerably lessened in consequence. But taking the figures as they stand, they are at least numerically valuable, as showing the total number of deaths from malaria and all causes combined, and thereby pointing out the salubrity or otherwise of particular localities.

17. It is not to be expected however that Burman Registrars and especially those of the class procurable, will for the present take an interest in vital statistics or other matters of purely scientific interest. The subject is in advance of the generation, and it will take a series of years of "Up hill work" before these records can be looked upon as thoroughly trustworthy, and accurate.

18. If I may be permitted to express an opinion I should say that until Burmese Doctors are educated specially for the purpose, the records should be kept in English as well as in Burmese by the different individuals, so as to render greater facilities for frequent examination of the Registers, and ensuring their being kept with greater exactitude.

K. N. MACDONALD,
*Civil Surgeon.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* PROME, *for the year ending* 31*st March* 1868. *Population* 23,420.

| Months | Sex. | Races. Burmese | Aracanese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 47 | " | " | " | " | .. | 1 | 96 | |
| | Females | 48 | " | " | .. | .. | .. | .. | | |
| May " | Males | 71 | " | " | .. | " | .. | .. | 131 | |
| | Females | 59 | " | " | 1 | " | .. | .. | | |
| June " | Males | 59 | " | " | .. | " | .. | 3 | 113 | |
| | Females | 50 | " | " | " | .. | .. | 1 | | |
| July " | Males | 51 | " | " | 1 | " | .. | .. | 103 | |
| | Females | 50 | " | .. | " | " | .. | 1 | | |
| August " | Males | 66 | " | " | .. | " | .. | 1 | 117 | |
| | Females | 50 | " | .. | .. | " | .. | .. | | |
| September " | Males | 44 | " | " | " | " | .. | 2 | 77 | |
| | Females | 31 | " | " | " | .. | .. | .. | | |
| October " | Males | 40 | " | " | .. | .. | .. | .. | 78 | |
| | Females | 38 | " | " | .. | " | .. | .. | | |
| November " | Males | 30 | " | " | 1 | " | .. | 2 | 71 | |
| | Females | 38 | .. | " | .. | " | .. | .. | | |
| December " | Males | 35 | .. | " | 2 | " | .. | 1 | 81 | |
| | Females | 42 | " | " | .. | " | .. | 1 | | |
| Jan. 1868 | Males | 38 | " | " | .. | " | .. | 2 | 93 | |
| | Females | 51 | " | " | 1 | " | .. | 1 | | |
| Feb. " | Males | 51 | " | " | .. | " | .. | 2 | 101 | |
| | Females | 46 | " | .. | .. | " | .. | 2 | | |
| March " | Males | 64 | " | " | .. | " | .. | .. | 119 | |
| | Females | 55 | " | " | .. | " | .. | .. | | |

K. N. MACDONALD,
*Civil Surgeon.*

Prome, 15th April 1868.

## Form B.

*Registration Return of* DEATHS *in the Town of* PROME, *for the year ending* 31*st March* 1868. *Population* 23,420.

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 44 | " | .. | " | 1 | 1 | 4 | 93 | |
| | Females | 42 | " | " | " | " | " | 1 | | |
| May " | Males | 53 | " | .. | " | 2 | 1 | " | 99 | |
| | Females | 40 | " | " | 2 | " | " | 1 | | |
| June " | Males | 51 | 1 | " | " | " | 2 | 2 | 91 | |
| | Females | 32 | " | " | 1 | " | " | 2 | | |
| July " | Males | 58 | " | " | " | 1 | 1 | " | 108 | |
| | Females | 47 | " | " | " | " | 1 | " | | |
| August " | Males | 48 | " | " | " | 1 | 3 | 2 | 92 | |
| | Females | 36 | " | " | " | " | " | 2 | | |
| September " | Males | 47 | " | .. | 2 | " | 1 | 2 | 80 | |
| | Females | 24 | " | " | " | " | " | 4 | | |
| October " | Males | 48 | " | " | 1 | " | 1 | " | 85 | |
| | Females | 33 | " | " | " | " | " | 2 | | |
| November " | Males | 99 | " | " | 2 | 2 | 3 | 8 | 188 | |
| | Females | 70 | " | " | 1 | " | " | 3 | | |
| December " | Males | 57 | " | " | 2 | " | 1 | 2 | 97 | |
| | Females | 35 | " | " | " | " | " | " | | |
| January 1868 | Males | 26 | " | " | 1 | " | 1 | 2 | 59 | |
| | Females | 27 | " | " | " | " | " | 2 | | |
| February " | Males | 34 | " | " | " | " | " | 4 | 71 | |
| | Females | 31 | " | " | " | " | " | 2 | | |
| March " | Males | 42 | " | " | " | 3 | " | 2 | 99 | |
| | Females | 46 | " | " | " | " | " | 6 | | |

K. N. MACDONALD.
*Civil Surgeon.*

**Form C.** *Return showing the supposed and ascertained cause of* DEATHS *among the several Races in* PROME *British Burma during the year ending* 31*st March* 1868.

| Nature of Diseases. | Burmese. | | | Aracanese | | | Karens | | | Shans. | | | Chinese | | | Natives of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Bill Berri ... ... ... | 23 | 10 | 33 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 23 | 10 | 33 | |
| Cholera ... ... ... | 81 | 43 | 124 | 1 | ,, | 1 | ,, | ,, | ,, | 2 | 1 | 3 | 3 | ,, | 3 | 4 | ,, | 4 | 8 | 2 | 10 | 99 | 46 | 145 | |
| Diarrhœa ... ... ... | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | 5 | 1 | 6 | |
| Small Pox ... ... ... | 19 | 13 | 32 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 19 | 14 | 33 | |
| Dysentery ... ... ... | 36 | 34 | 76 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 2 | ,, | 2 | 1 | ,, | 1 | 1 | 1 | 2 | 41 | 35 | 76 | |
| Fevers ... ... ... | 98 | 70 | 168 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 3 | 5 | 1 | ,, | 1 | 3 | ,, | 3 | 7 | 10 | 17 | 111 | 83 | 194 | |
| Atrophy ... ... ... | 99 | 118 | 217 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | 3 | 1 | 4 | 6 | 5 | 11 | 110 | 124 | 234 | |
| Body swelled up ... ... | 7 | 8 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 8 | 15 | |
| Ulcer ... ... ... | 5 | 4 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | 4 | 9 | |
| Vomiting blood ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Drunken ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Child bed ... ... ... | ,, | 22 | 22 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | ,, | 24 | 24 | |
| Appoplexy ... ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | |
| Violent death ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | ,, | ,, | ,, | 3 | ,, | 3 | |
| Snake bite ... ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 2 | 1 | 3 | |
| Syphilis ... ... ... | 3 | ,, | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 4 | ,, | 4 | |
| Asthma ... ... ... | 3 | ,, | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | |
| Drowned ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | 3 | ,, | 3 | |
| Diabetes ... ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Children's diseases ... ... | 213 | 132 | 345 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 4 | 8 | 219 | 136 | 355 | |
| Measles ... ... ... | 8 | 4 | 12 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 4 | 12 | |
| Rheumatism ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Fall from tree ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Wound and injuries ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Hydrophobia ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Pain in the chest ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Abscess ... ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| Poison ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Total ... | 607 | 463 | 1070 | 1 | ,, | 1 | ,, | ,, | ,, | 8 | 4 | 12 | 10 | ,, | 10 | 15 | 1 | 16 | 28 | 25 | 53 | 669 | 493 | 1162 | |

K. N. MACDONALD, *Civil Surgeon.*

## Form D.

*Return showing the* DEATHS *at various ages among the several Races in* PROME, *British Burma during the year ending 31st March* 1868.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Female, | Total. | |
| Still born ... ... ... | 23 | 10 | 33 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 23 | 10 | 33 | |
| Under 1 month ... ... | 66 | 40 | 106 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 67 | 40 | 107 | |
| do. 6 months ... ... | 74 | 40 | 114 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 3 | 2 | 5 | 78 | 42 | 120 | |
| do. 1 year ... ... | 39 | 12 | 41 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 39 | 13 | 52 | |
| 1 to 5 " ... ... | 110 | 110 | 220 | " | " | " | " | " | " | 1 | 1 | 2 | " | " | " | " | " | " | 2 | 5 | 7 | 113 | 116 | 229 | |
| 5 to 10 " ... ... | 32 | 14 | 46 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 4 | 5 | 33 | 18 | 51 | |
| 10 to 15 " ... ... | 7 | 9 | 16 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 8 | 9 | 17 | |
| 15 to 20 " ... ... | 33 | 25 | 58 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 1 | " | 1 | 3 | 1 | 4 | 38 | 26 | 64 | |
| 20 to 25 " ... ... | 16 | 10 | 26 | " | " | " | " | " | " | 1 | " | 1 | 1 | " | 1 | 1 | " | 1 | 2 | 1 | 3 | 21 | 11 | 32 | |
| 25 to 30 " ... ... | 42 | 26 | 68 | " | " | " | " | " | " | " | 2 | 2 | 2 | " | 2 | 5 | " | 5 | 3 | 1 | 4 | 52 | 29 | 81 | |
| 30 to 35 " ... ... | 26 | 13 | 39 | " | " | " | " | " | " | 2 | " | 2 | 3 | " | 3 | 2 | " | 2 | 2 | 1 | 3 | 35 | 14 | 49 | |
| 35 to 40 " ... ... | 41 | 30 | 71 | " | " | " | " | " | " | " | " | " | 2 | " | 2 | 2 | " | 2 | 5 | 3 | 8 | 50 | 33 | 83 | |
| 40 to 45 " ... ... | 16 | 1 | 17 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 2 | 2 | 4 | 19 | 3 | 22 | |
| 45 to 50 " ... ... | 16 | 26 | 42 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 | 1 | 1 | 2 | 19 | 27 | 46 | |
| 50 to 55 " ... ... | 10 | 3 | 13 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 10 | 3 | 13 | |
| 55 to 60 " ... ... | 22 | 31 | 53 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 | 1 | " | 1 | 25 | 31 | 56 | |
| 60 to 65 " ... ... | 6 | 10 | 16 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 7 | 11 | 18 | |
| 65 to 70 " ... ... | 14 | 25 | 39 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 15 | 26 | 41 | |
| 70 and upwards ... ... | 14 | 28 | 42 | 1 | " | 1 | " | " | " | " | 1 | 1 | " | " | " | 2 | 1 | 3 | " | 1 | 1 | 17 | 31 | 48 | |
| Total ... | 607 | 463 | 1070 | 1 | " | 1 | " | " | " | 8 | 4 | 12 | 10 | " | 10 | 15 | 1 | 16 | 28 | 25 | 53 | 669 | 493 | 1162 | |

K. N. MACDONALD,
*Civil Surgeon.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* SHWAY DOUNG *for the year ending* 31*st March* 1868. *Population* 10,385 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races | | |
| April 1867 | Males ... | 29 | ..... | ..... | ..... | ..... | ..... | ..... | 29 | |
| | Females. ... | 25 | ..... | ..... | ..... | ..... | ..... | ..... | 25 | |
| May " | Males ... | 24 | ..... | ..... | 1 | ..... | ..... | ..... | 25 | |
| | Females ... | 24 | ..... | ..... | 1 | ..... | ..... | ..... | 25 | |
| June " | Males ... | 30 | ..... | ..... | 1 | ..... | ..... | ..... | 31 | |
| | Females ... | 26 | ..... | ..... | 1 | ..... | ..... | ..... | 27 | |
| July " | Males ... | 37 | ..... | ..... | 4 | ..... | ..... | 1 | 42 | |
| | Females ... | 26 | ..... | ..... | ..... | ..... | ..... | ..... | 26 | |
| August " | Males ... | 39 | ..... | ..... | ..... | ..... | ..... | ..... | 39 | |
| | Females ... | 22 | ..... | ..... | ..... | ..... | ..... | ..... | 22 | |
| Sept. " | Males ... | 31 | ..... | ..... | ..... | ..... | 1 | ..... | 32 | |
| | Females ... | 27 | ..... | ..... | 1 | ..... | ..... | ..... | 28 | |
| October " | Males ... | 24 | ..... | ..... | ..... | ..... | ..... | ..... | 24 | |
| | Females ... | 13 | ..... | ..... | ..... | ..... | ..... | ..... | 13 | |
| Nov. " | Males ... | 11 | ..... | ..... | ..... | ..... | 1 | 1 | 13 | |
| | Females ... | 21 | ..... | ..... | ..... | ..... | ..... | 4 | 25 | |
| Decr. " | Males ... | 18 | ..... | ..... | 2 | ..... | ..... | 1 | 21 | |
| | Females ... | 20 | ..... | ..... | ..... | ..... | ..... | 1 | 21 | |
| Jan. 1868 | Males ... | 20 | ..... | ..... | ..... | ..... | ..... | ..... | 20 | |
| | Females ... | 18 | ..... | ..... | ..... | ..... | ..... | ..... | 18 | |
| Feb. " | Males ... | 17 | ..... | ..... | 2 | ..... | 1 | ..... | 20 | |
| | Females ... | 19 | ..... | ..... | ..... | ..... | ..... | 1 | 20 | |
| March " | Males ... | 21 | ..... | ..... | ..... | ..... | ..... | 1 | 22 | |
| | Females ... | 27 | ..... | ..... | ..... | ..... | ..... | ..... | 27 | |

K. N. MACDONALD, *Civil Surgeon*

## Form B.

*Registration Return of* DEATHS *in the Town of* SHWAYDOUNG, *for the year ending* 31*st march* 1868.—*Population* 10,385.

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Aracan-ese | Karens | Shans | Chinese | Native of India | Other Races | | |
| April 1868. | Males | 10 | ..... | ..... | ..... | ..... | ..... | 2 | 12 | |
| | Females | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 10 | |
| May " | Males | 10 | ..... | ..... | 2 | ..... | ..... | ..... | 12 | |
| | Females | 7 | ..... | ..... | ..... | ..... | ..... | ..... | 7 | |
| June " | Males | 22 | ..... | ..... | 1 | ..... | ..... | ..... | 23 | |
| | Females | 9 | ..... | ..... | ..... | ..... | ..... | 1 | 10 | |
| July " | Males | 18 | ..... | ..... | 3 | ..... | ..... | 1 | 22 | |
| | Females | 16 | ..... | ..... | 1 | ..... | ..... | ..... | 17 | |
| August " | Males | 25 | ..... | ..... | ..... | ..... | ..... | ..... | 25 | |
| | Females | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 9 | |
| Septr. " | Males | 16 | ..... | ..... | ..... | ..... | ..... | ..... | 16 | |
| | Females | 15 | ..... | ..... | 1 | ..... | ..... | ..... | 16 | |
| October " | Males | 15 | ..... | ..... | 1 | ..... | ..... | 1 | 17 | |
| | Females | 13 | ..... | ..... | ..... | ..... | ..... | ..... | 13 | |
| Novr. " | Males | 24 | ..... | ..... | ..... | ..... | ..... | 1 | 25 | |
| | Females | 19 | ..... | ..... | ..... | ..... | ..... | ..... | 19 | |
| Decr. " | Males | 13 | ..... | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 9 | |
| Jany. 1868. | Males | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 9 | |
| | Females | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 8 | |
| Feby. " | Males | 8 | ..... | ..... | 1 | ..... | ..... | ..... | 9 | |
| | Females | 2 | ..... | ..... | ..... | ..... | ..... | ..... | 2 | |
| March " | Males | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 8 | |
| | Females | 5 | ..... | ..... | ..... | ..... | ..... | ..... | 5 | |

K. N. MACDONALD,
*Civil Surgeon.*

Prome, 15th April, 1868.

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in* SHOAY DOUNG, *British Burmah during the year ending* 31*st March* 1868.

| Nature of Disease. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Total Males and Females. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Fever ... ..... ..... | 21 | 9 | 30 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 21 | 9 | 30 |
| Atrophy ..... ..... | 37 | 59 | 96 | ... | ... | ... | ... | ... | ... | 2 | 1 | 3 | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | 40 | 61 | 101 |
| Dysentery ..... ..... | 3 | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 4 | ... | 4 |
| Child Bed ..... ..... | ... | 7 | 7 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 8 |
| Abscess ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Body swelled up ... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Measles ..... ..... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Asthma ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Diarrhœa ..... ..... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Cholera ..... ..... | 20 | 8 | 28 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 21 | 8 | 29 |
| Wounds and Injuries ..... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| Hydrophobia ..... ..... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Drowned ..... ..... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Children's Diseases ..... | 90 | 37 | 127 | ... | ... | ... | ... | ... | ... | 5 | ... | 5 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | 97 | 37 | 134 |
| Still Born ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Miscarried ..... ..... | 3 | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| Total ..... | 178 | 122 | 300 | ... | ... | ... | ... | ... | ... | 8 | 2 | 10 | ... | ... | ... | ... | ... | ... | 5 | 1 | 6 | 191 | 125 | 316 |

K. N. MACDONALD, *Civil Surgeon.*

## Form D.

*Return showing the* DEATHS *at various ages among the several Races in* SHWAYDOUNG, *British Burma, during the year ending* 31*st March* 1868.

| | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | TOTAL. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Still born ... ..... ..... | 3 | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| Under 1 month .. ..... | 43 | 14 | 57 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 45 | 14 | 59 |
| do 6 months..... ..... | 17 | 6 | 23 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 19 | 6 | 25 |
| do 1 year ..... ..... | 11 | 5 | 16 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | 5 | 18 |
| 1 to 5 ,, ..... ..... | 38 | 25 | 63 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 39 | 25 | 64 |
| 5 to 10 ,, ..... ..... | 5 | 3 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 3 | 8 |
| 10 to 15 ,, ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| 15 to 20 ,, ..... ..... | 2 | 3 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 3 | 5 |
| 20 to 25 ,, ..... ..... | 3 | 5 | 8 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 6 | 9 |
| 25 to 30 ,, ..... ..... | 5 | 8 | 13 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 8 | 13 |
| 30 to 35 ,, ..... ..... | 3 | 5 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 5 | 8 |
| 35 to 40 ,, ..... ..... | 6 | 5 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 5 | 11 |
| 40 to 45 ,, ..... ..... | 5 | 3 | 8 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | 9 | 3 | 12 |
| 45 to 50 ,, ..... ..... | 7 | 4 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 8 | 4 | 12 |
| 50 to 55 ,, ..... ..... | 7 | ... | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | ... | 7 |
| 55 to 60 ,, ..... ..... | 3 | 4 | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 4 | 7 |
| 60 to 65 ,, ..... ..... | 7 | 9 | 16 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 7 | 11 | 18 |
| 65 to 70 ,, ..... ..... | 13 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 70 and upward ..... ..... | ... | 23 | 36 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | 23 | 36 |
| Total ... | 178 | 122 | 300 | ... | ... | ... | ... | ... | ... | 8 | 2 | 10 | ... | ... | ... | ... | ... | ... | 5 | 1 | 6 | 191 | 125 | 316 |

K. N. MACDONALD, *Civil Surgeon.*

**REPORT on the RETURNS of BIRTHS and DEATHS in the town of MYAN OUNG and KYAN-GHEEN, for the year ending 31st March 1868.**

The population of Myan Oung as taken in 1867 was
Myan Oung 5,598 souls.

2. The Registered Return marked A shews that 201 children have been born during the year just closed. Of this number 94 are males and 107 females.

3. The females exceed the males by 13.

4. The average rate of children per 100 of the population is 3.590 against 2.730 of the previous year, and which is a very satisfactory birth rate.

5. The Births exceed the Deaths by 80 or nearly double the number registered the previous year.

## DEATHS.

6. The return marked B shews for the same period 121 deaths. Of this number 69 were females and 52 males.

7. The percentage of deaths to population is 2.1 against 1.9 of the previous year.

8: The deaths from Cholera have caused the increase by 14 over that of the previous year and by deducting this number from the total of deaths we have the same number of deaths as in 1866-67, viz: 107.

9. Return marked C shows the Age, &c., of the persons who died, and the largest number of deaths has taken place from the age of 10 and under.

10. The causes or diseases, from which deaths are registered to have taken place, are as follows as shewn in Return marked D.

| | |
|---|---|
| From Disease of the Lungs .. .. .. .. .. | 12 |
| From Cholera .. .. .. .. .. .. .. .. | 14 |
| From Fever .. .. .. .. .. .. .. .. | 34 |
| From Dysentery .. .. .. .. .. .. .. | 16 |
| From Atrophy and old age .. .. .. .. | 23 |
| From Violent Deaths .. .. .. .. .. .. | 4 |
| Still born .. .. .. .. .. .. .. .. .. | 6 |
| From Ulcers .. .. .. .. .. .. .. .. | 3 |
| From Giddiness.. .. .. .. .. .. .. .. | 2 |
| From Dropsy .. .. .. .. .. .. .. .. | 1 |
| From Uterine irregularities .. .. .. .. .. | 2 |
| From Infantile disorders .. .. .. .. .. .. | 4 |
| Total .. | 121 |

11. The bulk of deaths I have to remark again, has taken place from the age of 10 years to uterine life.

12. The cause, in producing so high a mortality during infancy and childhood, is obvious and needs no further explanation than the repitition of the fact, that the (Burmese) parents from want of a better knowledge as to how their tender ones are to be brought up or managed, actually help their children to become sick by over indulgence, taken in every sense of the term ; if they would supply their infants, possessing but weak and imperfect powers of digestion and mastication, with such nourishment only as nature points out as the most suitable, doubtless parents will be spared much pain and the lives of their little ones preserved.

13. There have been four violent deaths which have also in a measure tended to augment the death rate.

14. The other casualties recorded are the results of old age and natural causes.

15. The population of the town of Kyan-Gheen as taken in 1867 was 7661 souls.

Kyan-Gheen.

16. Returns marked A. B. C and D. show the following particulars of information. Return A. shows 204 Births for the year, which gives a per centage of 2.6 to the population.

17. Of the total Births 112 were males and 92 females.

18. The males exceed the females by 20. The rate of Birth is lower than the rate at Myan Oung.

19. Return B gives the Deaths Registered during the year, viz: males 62, and females 79. Making a total of 161 deaths, giving a percentage of 2.1 to the population.

20. Return C has registered the Age, &c., of the persons deceased. Here also the bulk of deaths has taken place from the age of 10 years and under and which amounts to 59, exclusive of still births, or more than one third of the total deaths.

21. Return D gives the Diseases from which deaths have taken place during the year:—

| | |
|---|---|
| From Diseases of the Lungs .. .. | 9 |
| From Fevers .. .. .. | 64 |
| From Ulcers .. .. .. | 2 |
| From Female irregularities .. .. | 11 |
| From Cholera .. .. .. | 15 |
| From Violent Deaths .. .. | 5 |
| From Old Age and Atrophy .. .. | 33 |
| From Infantile Diseases .. .. | 12 |
| And Still births .. .. .. | 10 |
| Total | 161 |

22. There has been very nearly twice the number of deaths from fever than those registered at Myân Oung.

P. GEO: PAUL,
*In Medical Charge.*

Myan Oung, 1st April 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* MYANOUNG, *for the year ending* 31*st March* 1868. *Population* 5,598 *Souls.*

| Months | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 6 | " | " | " | " | .. | " | 10 | Number of Children under 1 year of age 176 |
| | Females | 4 | " | " | .. | .. | .. | .. | | |
| May " | Males | 5 | " | " | .. | " | .. | .. | 13 | ..... |
| | Females | 8 | " | " | " | " | .. | .. | | |
| June " | Males | 8 | " | " | .. | " | .. | " | 17 | |
| | Females | 9 | " | " | " | .. | .. | " | | |
| July " | Males | 7 | " | " | " | " | .. | .. | 16 | .... |
| | Females | 9 | " | .. | " | " | .. | " | | |
| August " | Males | 6 | " | " | .. | " | .. | 1 | 15 | |
| | Females | 7 | " | .. | .. | " | .. | 1 | | ..... |
| September " | Males | 7 | " | " | " | " | .. | " | 14 | |
| | Females | 6 | " | " | " | 1 | .. | .. | | |
| October " | Males | 9 | " | " | .. | .. | .. | .. | 19 | |
| | Females | 10 | " | " | .. | " | .. | .. | | |
| November " | Males | 10 | " | " | " | " | .. | .. | 19 | |
| | Females | 7 | .. | " | .. | " | 1 | 1 | | |
| December " | Males | 7 | .. | " | " | " | .. | " | 15 | |
| | Females | 7 | " | " | .. | " | .. | 1 | | |
| Jan. 1868 | Males | 9 | " | " | .. | " | .. | " | 21 | |
| | Females | 12 | " | " | " | " | .. | " | | |
| Feb. " | Males | 8 | " | " | .. | " | 1 | " | 21 | |
| | Females | 11 | " | .. | . | " | 1 | " | | |
| March " | Males | 9 | " | " | .. | 1 | .. | .. | 21 | |
| | Females | 11 | " | " | .. | " | .. | .. | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* MYANOUNG, *for the year ending* 31*st March* 1868. *Population* 5,598 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | | |
| April 1867 | Males | 3 | " | " | " | " | 1 | " | 7 | |
| | Females | 2 | " | " | " | " | 1 | " | | |
| May " | Males | 2 | " | " | " | " | 1 | " | 7 | |
| | Females | 3 | " | " | " | 1 | " | " | | |
| June " | Males | 4 | " | " | " | " | " | " | 10 | |
| | Females | 6 | " | " | " | " | " | " | | |
| July " | Males | 5 | " | " | " | " | " | " | 12 | |
| | Females | 7 | " | " | " | " | " | " | | |
| August " | Males | 8 | " | " | " | " | " | " | 12 | |
| | Females | 4 | " | " | " | " | " | " | | |
| September " | Males | 6 | " | " | " | " | " | " | 10 | |
| | Females | 4 | " | " | " | " | " | " | | |
| October " | Males | 4 | " | " | 1 | " | 1 | " | 12 | |
| | Females | 6 | " | " | " | " | " | " | | |
| November " | Males | 9 | " | " | " | " | " | " | 12 | |
| | Females | 3 | " | " | " | " | " | " | | |
| December " | Males | 3 | " | " | " | " | " | " | 7 | |
| | Females | 3 | " | " | " | " | " | 1 | | |
| January 1868 | Males | 7 | " | " | " | " | 1 | " | 11 | |
| | Females | 3 | " | " | " | " | " | " | | |
| February " | Males | 7 | " | " | " | " | " | " | 13 | |
| | Females | 6 | " | " | " | " | " | " | | |
| March " | Males | 5 | " | " | " | " | 1 | " | 8 | |
| | Females | 2 | " | " | " | " | " | " | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained cause of* DEATHS *among the several Races in the Town of* MYANOUNG. *for the year ending* 31*st March* 1868.

| Nature of Diseases. | Burmese. | | | Aracanese | | | Karens. | | | Shans. | | | Chinese. | | | Natives of India. | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Coughs ... ... ... | 1 | 5 | 6 | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | " | " | 1 | 6 | 7 | |
| Cholera ... ... ... | 12 | 2 | 14 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 12 | 2 | 14 | |
| Fever ... ... ... | 19 | 11 | 30 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 3 | " | 3 | " | " | " | 22 | 12 | 34 | |
| Dysentery ... ... ... | 11 | 4 | 15 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 12 | 4 | 16 | |
| Pain in chest ... ... | 2 | 2 | 4 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 3 | 2 | 5 | |
| Old age ... ... ... | 2 | 7 | 9 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 7 | 9 | |
| Atrophy ... ... ... | 7 | 7 | 14 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 7 | 7 | 14 | |
| Murder ... ... ... | " | 2 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | |
| Still Born ... ... ... | 3 | 1 | 4 | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | 1 | 1 | 3 | 3 | 6 | |
| Ulcers ... ... ... | 2 | 1 | 3 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 1 | 3 | |
| Giddiness ... ... ... | 1 | " | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 2 | " | 2 | |
| Culp: homicide ... ... | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | |
| Swelling of body ... ... | " | 1 | 1 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | |
| Female irregularities ... | " | 2 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | |
| Infantine diseases ... ... | 2 | 2 | 4 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | 4 | |
| Total ... | 63 | 48 | 111 | " | " | " | " | " | " | 1 | " | 1 | " | 1 | 1 | 5 | 2 | 7 | " | 1 | 1 | 69 | 52 | 121 | |

H. A. GOWER,
*For Deputy Commissioner*

## Form D.

*Reteurn showing the* DEATHS, *at various ages among the several races in the Town of* MYANOUNG, *for the year ending the 31st March* 1868.—*Population* 5,598 *Souls.*

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | |
| Still born ... ... ... | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | 1 | 1 | 3 | 3 | 6 | |
| Under 1 month ... ... | 4 | 5 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 5 | 9 | |
| do. 6 months ... ... | 2 | 4 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 3 | 4 | 7 | |
| do. 1 year ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | |
| 5 to 10 ,, ... ... | 16 | 7 | 23 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 16 | 8 | 24 | |
| 10 to 15 ,, ... ... | 4 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | ,, | 4 | |
| 15 to 20 ,, ... ... | 4 | 2 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 2 | 6 | |
| 20 to 25 ,, ... ... | 6 | 2 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | 8 | 2 | 10 | |
| 25 to 30 ,, ... ... | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | |
| 35 to 40 ,, ... ... | 4 | 5 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 5 | 9 | |
| 45 to 50 ,, ... ... | 3 | 4 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 2 | 1 | 3 | ,, | ,, | ,, | 6 | 5 | 11 | |
| 50 to 55 ,, ... ... | 1 | 4 | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 4 | 5 | |
| 55 to 60 ,, ... ... | ,, | 4 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 4 | |
| 60 to 65 ,, ... ... | 6 | 3 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 6 | 3 | 9 | |
| 65 to 70 ,, ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| 70 and upwards ... ... | 4 | 4 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 4 | 8 | |
| Total ... | 63 | 48 | 111 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | 1 | 1 | 5 | 2 | 7 | ,, | 1 | 1 | 69 | 52 | 121 | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* KYAN-GHEEN *for the year ending the* 31*st March* 1868. *Population* 7,661 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 14 | Number of Children under 1 year of age ..... 163. |
| | Females. ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| May " | Males ... | 12 | ..... | ..... | ..... | ..... | ..... | ..... | 18 | |
| | Females ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| June " | Males ... | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 14 | |
| | Females ... | 5 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| July " | Males ... | 14 | ..... | ..... | ..... | ..... | ..... | ..... | 20 | |
| | Females ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| August " | Males ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | 16 | |
| | Females ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Sept. " | Males ... | 4 | ..... | ..... | ..... | ..... | ..... | ..... | 10 | |
| | Females ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males ... | 5 | ..... | ..... | ..... | ..... | ..... | ..... | 9 | |
| | Females ... | 4 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Nov. " | Males ... | 15 | ..... | ..... | ..... | ..... | ..... | ..... | 28 | |
| | Females ... | 13 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Decr. " | Males ... | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 15 | |
| | Females ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Jan. 1868 | Males ... | 11 | ..... | ..... | ..... | ..... | ..... | ..... | 23 | |
| | Females ... | 12 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Feb. " | Males ... | 12 | ..... | ..... | ..... | ..... | ..... | ..... | 22 | |
| | Females ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| March " | Males ... | 6 | ..... | ..... | ..... | 1 | ..... | ..... | 15 | |
| | Females ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* KYAN-GHEEN, *for the year ending 31st march* 1868.—*Population* 7,661 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | 2 | .. | ..... | ..... | ..... | ..... | ..... | 3 | |
| | Females | 1 | .. | ..... | ..... | ..... | ..... | ..... | | |
| May " | Males | 13 | .. | ..... | ..... | ..... | ..... | ..... | 16 | |
| | Females | 3 | .. | ..... | ..... | ..... | ..... | ..... | | |
| June " | Males | 5 | .. | ..... | ..... | ..... | ..... | ..... | 10 | |
| | Females | 5 | .. | ..... | ..... | ..... | ..... | ..... | | |
| July " | Males | 2 | .. | ..... | ..... | ..... | ..... | ..... | 7 | |
| | Females | 5 | .. | ..... | ..... | ..... | ..... | ..... | | |
| August " | Males | 16 | .. | ..... | ..... | ..... | ..... | ..... | 26 | |
| | Females | 10 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Septr. " | Males | 5 | .. | ..... | ..... | ..... | ..... | ..... | 12 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males | 7 | .. | ..... | ..... | ..... | ..... | ..... | 14 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Novr. " | Males | 13 | .. | ..... | ..... | ..... | ..... | ..... | 22 | |
| | Females | 9 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Decr. " | Males | 5 | .. | ..... | ..... | ..... | ..... | ..... | 14 | |
| | Females | 9 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Jany. 1868. | Males | 6 | .. | ..... | ..... | ..... | ..... | ..... | 15 | |
| | Females | 9 | ... | ..... | ..... | ..... | ..... | ..... | | |
| Feby. " | Males | 3 | .. | ..... | ..... | ..... | ..... | ..... | 9 | |
| | Females | 6 | .. | ..... | ..... | ..... | ..... | ..... | | |
| March " | Males | 5 | .. | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 8 | .. | ..... | ..... | ..... | ..... | ..... | | |

H. A. GOWER,
*Civil Surgeon.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in* KYAN-GHEEN, *during the year ending 31st March* 1868.—*Population* 7,661 *Souls.*

| Nature of Disease. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Total Males and Females. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total |
| Infantine diseases ..... ..... | 8 | 4 | 12 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 4 | 12 |
| Cold and Coughs ..... ..... | 4 | 5 | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 5 | 9 |
| Fever ..... ..... ..... | 30 | 34 | 64 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 30 | 34 | 64 |
| Ulcers ..... ..... ..... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 |
| Female irregularities ..... | ... | 11 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 11 | 11 |
| Still born ... ..... ..... | 8 | 2 | 10 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 2 | 10 |
| Cholera ..... ..... ..... | 11 | 4 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 11 | 4 | 15 |
| Drowned ... ..... ..... | 2 | 3 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 3 | 5 |
| Old age ..... ..... ..... | 8 | 10 | 18 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 10 | 18 |
| Atrophy and general debility ... | 9 | 6 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 9 | 6 | 15 |
| Total ..... | 82 | 79 | 161 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 82 | 79 | 161 |

H. A. GOWER, *For Deputy Commissioner.*

## Form D.

*Return showing the* DEATHS *at various ages among the several Races in the Town of* KYAN-GHEEN, *for the year ending* 31*st March* 1868.

| Ages. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Still born ... ..... ..... | 8 | 2 | 10 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 2 | 10 |
| Under 1 month ..... ..... | 5 | 3 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 3 | 8 |
| do 6 months ..... ..... | 12 | 7 | 19 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12 | 7 | 19 |
| do 1 year ..... ..... | 2 | 2 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 | 4 |
| 5 to 10 ,, ..... ..... | 15 | 13 | 28 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | 13 | 28 |
| 10 to 15 ,, ..... ..... | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 |
| 15 to 20 ,, ..... ..... | 2 | 9 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 9 | 11 |
| 20 to 25 ,, ..... ..... | 2 | 3 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 3 | 5 |
| 25 to 30 ,, ..... ..... | 3 | 5 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 5 | 8 |
| 35 to 40 ,, ..... ..... | 7 | 7 | 14 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | 7 | 14 |
| 45 to 50 ,, ..... ..... | 6 | 4 | 10 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 4 | 10 |
| 50 to 55 ,, ..... ..... | 5 | 1 | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 1 | 6 |
| 55 to 60 ,, ..... ..... | 6 | 6 | 12 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 6 | 12 |
| 60 to 65 ,, ..... ..... | 3 | 4 | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 4 | 7 |
| 65 to 70 ,, ..... ..... | 5 | 10 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 10 | 15 |
| 70 and upward ..... ..... | ... | 2 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 |
| Total ... | 82 | 79 | 161 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 82 | 79 | 161 |

H. A. GOWER, *For Deputy Commissioner.*

**REPORT on BIRTHS and DEATHS for the towns of HENZADAH and ZALOON in the District of MYANOUNG, for the year 1867-68.**

Henzadah. The Population of Henzadah as taken in 1867 was 14,320 Souls.

2. The Registered Return marked A. shows the Births of 613 children during the year, viz :—

Girls 289 and
Boys 324 making a total of 613.

3. The males exceed the females by 35.

4. The average birth to 100 of the population is 4.2.

5. The births exceed the deaths by 188.

## DEATHS.

6. The Return marked B. shows 425 deaths to have taken place during the year. Of this No. 218 were males, and 207 females.

7. The percentage of deaths to population is 2.9.

8. Return marked D. gives the ages, &c., of the persons who have died, and the largest No. of deaths is from the age of 10 years and under, and Henzadah in particular seems to be peculiarly unhealthy to infants and children, as the Return exhibits a very large proportion of deaths among the juveniles.

9. Return C. exhibits the causes or diseases from which deaths have resulted, it also shows that the majority of deaths is due to causes of malarious origin.

Zaloon. 10. The population as taken in 1867 was 3,457 souls.

11. Return A. shows 209 births, namely 107 males, and females 102. The former exceed the latter by 5.

12. The average rate of births to population is 6 per 100.

## DEATHS.

13. There have been 146 deaths registered during the year. 75 were males, and 71 females. The former exceeding the latter by 4.

14. The percentage of deaths to population is 4.2.

15. Return marked D. gives the age, &c., of the deceased persons, and

16. Return C. of the causes of deaths.

## RESUME.

17. A glance, at the Returns of births and deaths of this District, will show that Myanoung stands foremost judging it by its small death rate, and consequently Myanoung may be looked upon as the healthiest town in the District. But may it not be made healthier.

18. The town of Myanoung is situated on a narrow strip of land having the Irrawaddy on the one side and the low marshy ground with clayey absorbent soil on the other. The ground along the Embankment is in some places from 2½ to 3 feet deep, and is saturated with moisture for a considerable time after the rains and abounds with animal and vegetable substances in a state of decomposition (the excavations are largely resorted to by the people as places of convenience,) and under the circumstances I am led to look upon the present state of the town as likely to be productive of diseases of serious nature under an unfavorable condition of an increased temperature.

19. The wellbeing of the people of a place much depends on the condition of the atmosphére surrounding them ; of all the external agents by which the animal system is influenced, air may be considered as the most immediately connected with the continuance of life, if it be

moist, as that of Burma generally is and holding the exhalations constantly given out from these low situations, then as a matter of course the noxious influence of the respired air must act very seriously on public health and prove a prolific source of Miasmatic Diseases, and as long as these marshes are allowed to be overgrown with vegetation and prevent a free action of the sun, and to fill during the periodical rains, it may be anticipated that in progress of time, the atmosphere with surcharged exhalations will exert its baneful influence on the town.

20. To prevent disease ought to be our first and most important aim, and it is a well known fact that prevention is better than cure, and acting on the principle, I beg most respectfully and earnestly to recommend, that, the overgrowing vegetation be always kept down and the excavations be either filled up or drained to render the place more healthy.

P. GEO: PAUL,
*In Medical Charge.*

Myanoung, 1st April 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* HENZADAH, *for the year ending* 31*st March* 1868. *Population* 14,320 *Souls.*

| Months' | Sex. | Races. Burmese | Arakanese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 15 | " | " | " | " | .. | " | 34 | |
| | Females | 19 | " | " | .. | .. | .. | .. | | |
| May " | Males | 21 | " | " | .. | " | .. | .. | 44 | |
| | Females | 21 | " | " | " | " | 2 | .. | | |
| June " | Males | 25 | " | " | .. | " | 1 | " | 47 | |
| | Females | 21 | " | " | " | .. | .. | " | | |
| July " | Males | 31 | " | " | " | " | .. | .. | 59 | |
| | Females | 28 | " | .. | " | " | .. | " | | |
| August " | Males | 30 | " | " | .. | " | .. | 1 | 58 | |
| | Females | 27 | " | .. | .. | " | .. | " | | |
| September " | Males | 29 | " | " | " | " | .. | 1 | 53 | |
| | Females | 23 | " | " | " | " | .. | .. | | |
| October " | Males | 23 | " | 1 | .. | .. | .. | 2 | 50 | |
| | Females | 23 | " | " | .. | " | .. | 1 | | |
| November " | Males | 30 | " | " | " | " | .. | 1 | 58 | |
| | Females | 26 | .. | " | .. | 1 | .. | .. | | |
| December " | Males | 20 | .. | " | " | " | 1 | 1 | 43 | |
| | Females | 20 | " | " | .. | " | .. | 1 | | |
| Jan. 1868 | Males | 28 | " | " | .. | " | " | 4 | 65 | |
| | Females | 31 | " | " | " | " | " | 2 | | |
| Feb. " | Males | 29 | " | " | .. | " | 2 | 6 | 60 | |
| | Females | 18 | " | .. | 1 | " | 1 | 3 | | |
| March " | Males | 20 | " | " | .. | " | .. | 2 | 42 | |
| | Females | 16 | " | " | .. | " | .. | 4 | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* HENZADAH, *for the year ending* 31*st March* 1868. *Population* 14,320 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | | |
| April 1867 | Males | 13 | " | " | " | " | 1 | " | 23 | |
| | Females | 9 | " | " | " | " | " | " | | |
| May " | Males | 17 | " | " | " | " | " | " | 23 | |
| | Females | 15 | " | " | " | " | 1 | " | | |
| June " | Males | 17 | " | " | " | " | " | " | 29 | |
| | Females | 11 | " | " | 1 | " | " | " | | |
| July " | Males | 25 | " | " | " | " | " | 1 | 47 | |
| | Females | 21 | " | " | " | " | " | " | | |
| August " | Males | 20 | " | " | " | " | " | 2 | 45 | |
| | Females | 22 | " | " | " | " | " | 1 | | |
| September " | Males | 16 | " | " | " | " | " | 1 | 44 | |
| | Females | 26 | " | " | " | " | " | 1 | | |
| October " | Males | 16 | " | " | " | " | " | 2 | 41 | |
| | Females | 23 | " | " | " | " | " | " | | |
| November " | Males | 17 | " | " | " | " | " | 2 | 33 | |
| | Females | 13 | " | " | " | 1 | " | " | | |
| December " | Males | 11 | " | " | " | " | " | 1 | 26 | |
| | Females | 14 | " | " | " | " | " | " | | |
| January 1868 | Males | 24 | " | " | " | " | " | 1 | 40 | |
| | Females | 13 | " | " | " | " | 1 | 1 | | |
| February " | Males | 12 | " | " | " | " | " | 3 | 34 | |
| | Females | 13 | " | " | 2 | " | " | 4 | | |
| March " | Males | 15 | " | " | " | " | " | 1 | 30 | |
| | Females | 14 | " | " | " | " | " | " | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* HENZADAH, *for the year ending* 31*st March* 1868. *Population* 14,320 *Souls.*

| Nature of Diseases. | Burmese. | | | Aracanese | | | Karens. | | | Shans. | | | Chinese. | | | Natives of India. | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still Born ... ... ... | 9 | 13 | 22 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 13 | 22 | |
| Fever ... ... ... | 55 | 29 | 84 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 4 | 6 | 57 | 35 | 92 | |
| Female irregularities ... | ,, | 21 | 21 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 21 | 21 | |
| Infant diseases ... ... | 59 | 44 | 103 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | ,, | 1 | 1 | 1 | ,, | 1 | 2 | 1 | 3 | 62 | 48 | 110 | |
| Pain in the sides ... ... | 7 | 7 | 14 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 8 | 7 | 15 | |
| Small Pox ... ... ... | 18 | 28 | 46 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | 21 | 28 | 49 | |
| Thirst with purging ... | 5 | 6 | 11 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 7 | 6 | 13 | |
| Old age ... ... ... | 13 | 23 | 36 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | 4 | 15 | 25 | 40 | |
| Ulcers ... ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Pain in the chest ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | |
| Aneurism ... ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | |
| Dysentery ... ... ... | 12 | 6 | 18 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 12 | 7 | 19 | |
| Benumbed limbs ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Coughs ... ... ... | 4 | 1 | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 1 | 5 | |
| Vomitting blood ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Tumorous ulcers ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Body swelling ... ... | 2 | 2 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 4 | 2 | 6 | |
| Insanity ... ... ... | ,, | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | |
| Hydrophobia ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Dropsy ... ... ... | ,, | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | |
| Drowned ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Rheumatic ... ... | 5 | ,, | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | ,, | 5 | |
| Apoplexy ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Cholera ... ... ... | 3 | 3 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 3 | 6 | |
| Venereals ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Giddiness ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Total ... | 203 | 194 | 397 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 3 | ,, | 1 | 1 | 1 | 2 | 3 | 14 | 7 | 21 | 218 | 207 | 425 | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form D.

*Return showing the* DEATHS, *at various ages among the several races in the Town of* HENZADAH, *for the year ending the* 31*st March* 1868.—*Population* 14,320 *Souls.*

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... ... | 9 | 13 | 22 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 13 | 22 | |
| Under 1 month ... ... | 14 | 9 | 23 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 14 | 11 | 25 | |
| do. 6 months ... ... | 34 | 33 | 67 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | 36 | 34 | 70 | |
| do. 1 year ... ... | 22 | 16 | 38 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 23 | 17 | 40 | |
| 5 to 10 years ... ... | 32 | 33 | 65 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 33 | 34 | 67 | |
| 10 to 15 ,, ... ... | 13 | 7 | 20 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 15 | 7 | 22 | |
| 15 to 20 ,, ... ... | 9 | 7 | 16 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 11 | 7 | 18 | |
| 20 to 25 ,, ... ... | 7 | 6 | 13 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 6 | 13 | |
| 25 to 30 ,, ... ... | 3 | 10 | 13 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 4 | 11 | 15 | |
| 35 to 40 ,, ... ... | 28 | 15 | 43 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | 29 | 17 | 46 | |
| 45 to 50 ,, ... ... | 6 | 7 | 13 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 1 | 1 | 2 | 7 | 9 | 16 | |
| 50 to 55 ,, ... ... | 3 | 4 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | 6 | 5 | 11 | |
| 55 to 60 ,, ... ... | 4 | 4 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | 4 | 6 | 10 | |
| 60 to 65 ,, ... ... | 10 | 8 | 18 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 10 | 8 | 18 | |
| 65 to 70 ,, ... ... | 2 | 10 | 12 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 3 | 10 | 13 | |
| 70 and upwards ... ... | 7 | 12 | 19 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 12 | 19 | |
| Total ... | 203 | 194 | 397 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 3 | ,, | 1 | 1 | 1 | 2 | 3 | 14 | 7 | 21 | 218 | 207 | 425 | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* ZALOON *for the year ending the* 31*st March* 1868. *Population* 3,457 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 17 | |
| | Females ... | 7 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| May " | Males ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 23 | |
| | Females ... | 13 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| June " | Males ... | 11 | ..... | ..... | ..... | ..... | ..... | ..... | 20 | |
| | Females ... | 9 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| July " | Males ... | 7 | ..... | ..... | ..... | ..... | ..... | ..... | 15 | |
| | Females ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| August " | Males ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 18 | |
| | Females ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Sept. " | Males ... | 13 | ..... | ..... | ..... | ..... | ..... | ..... | 21 | |
| | Females ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males ... | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 17 | |
| | Females ... | 9 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Nov. " | Males ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 17 | |
| | Females ... | 7 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Decr. " | Males ... | 2 | ..... | ..... | ..... | ..... | ..... | ..... | 4 | |
| | Females ... | 2 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Jan. 1868 | Males ... | 11 | ..... | ..... | ..... | ..... | ..... | ..... | 23 | |
| | Females ... | 12 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| Feb. " | Males ... | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 21 | |
| | Females ... | 11 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| March " | Males ... | 7 | ..... | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females ... | 6 | ..... | ..... | ..... | ..... | ..... | ..... | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* ZALOON, *for the year ending* 31*st March* 1868.—*Population* 3,457 *Souls.*

| Months. | Sex. | Races. Burmese | Arracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | 6 | ..... | ..... | ..... | ..... | ..... | ..... | 11 | |
| | Females | 5 | .. | ..... | ..... | ..... | ..... | ..... | | |
| May ". | Males | 7 | .. | ..... | ..... | ..... | ..... | ..... | 14 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| June " | Males | 7 | .. | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 6 | .. | ..... | ..... | ..... | ..... | ..... | | |
| July " | Males | 5 | .. | ..... | ..... | ..... | ..... | ..... | 14 | |
| | Females | 9 | .. | ..... | ..... | ..... | ..... | ..... | | |
| August " | Males | 7 | .. | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 6 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Septr. " | Males | 7 | .. | ..... | ..... | ..... | ..... | ..... | 12 | |
| | Females | 5 | .. | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males | 9 | .. | ..... | ..... | ..... | ..... | ..... | 15 | |
| | Females | 6 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Novr " | Males | 6 | .. | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Decr. " | Males | 1 | .. | ..... | ..... | ..... | ..... | ..... | 2 | |
| | Females | 1 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Jany 1868. | Males | 6 | .. | ..... | ..... | ..... | ..... | ..... | 13 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Feby " | Males | 8 | .. | ..... | ..... | ..... | ..... | ..... | 15 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| March " | Males | 6 | .. | ..... | ..... | ..... | ..... | ..... | 11 | |
| | Females | 5 | .. | ..... | ..... | ..... | ..... | ..... | | |

H. A. GOWER,
*For Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* ZALOON, *for the year ending* 31*st March* 1868.—*Population* 3,457 *Souls.*

| Nature of Disease. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Total Males and Females. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Fever ..... ..... ..... | 32 | 20 | 52 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 32 | 20 | 52 |
| Female irregularities ..... | ..... | 15 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | 15 |
| Infantine diseases ..... ..... | 25 | 16 | 41 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 25 | 16 | 41 |
| Cholera ..... ..... ..... | 10 | 11 | 21 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10 | 11 | 21 |
| Dysentry ... ..... ..... | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 |
| Old age ..... ..... ..... | 4 | 6 | 10 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 6 | 10 |
| Uterine disorders ..... ..... | ..... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Pain in chest ..... ..... | 3 | ..... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| Asthma ..... ..... ..... | ..... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Total ..... | 75 | 71 | 146 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 75 | 71 | 146 |

H. A. GOWER, *For Deputy Commissioner.*

## Form D.

*Return showing the* DEATHS *at various ages among the several Races in the Town of* ZALOON, *for the year ending* 31*st March* 1868.—*Population* 3,457 *Souls.*

| Ages. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Still born ... ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| Under 1 month ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| do 6 months ..... ..... | 16 | 11 | 27 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 16 | 11 | 27 |
| do 1 year ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| 5 to 10 years ..... ..... | 25 | 25 | 50 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 25 | 25 | 50 |
| 10 to 15 ,, ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | .. |
| 15 to 20 ,, ..... ..... | 1 | 2 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 |
| 20 to 25 ,, ..... ..... | 6 | 11 | 17 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 11 | 17 |
| 25 to 30 ,, ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| 35 to 40 ,, ..... ..... | 13 | 10 | 23 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | 10 | 23 |
| 45 to 50 ,, ..... ..... | 7 | 4 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | 4 | 11 |
| 50 to 55 ,, ..... ..... | 3 | 1 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 1 | 4 |
| 55 to 60 ,, ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| 60 to 65 ,, ..... ..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | .. | ... |
| 65 to 70 ,, ..... ..... | ... | 3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 3 | 3 |
| 70 and upwards ..... ..... | 4 | 4 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 4 | 8 |
| Total ... | 75 | 71 | 146 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 75 | 71 | 146 |

H. A. GOWER, *For Deputy Commissioner.*

## ANNUAL REPORT on BIRTHS and DEATHS of the Town of TOUNGOO, for 1867-68.

The year 1867-68 will compare favourably with that preceding it, if the death rate alone be considered; as to the births registered however it shows a considerable decrease on the two preceding years, the birth rate being even lower than the death rate, as was also the case in 1865-66, this result being then however due to a very exceptional increase in the death rate, and not, as in the year under review, to an actual falling-off in the number of births recorded.

2. The population of Toungoo at the corresponding period of 1867 was estimated at 4,783 males and 4,880 females; it is now rated at 4,754 males and 4,857 females, shewing a decrease of 52.

3. The deaths during the year just past are stated to have been 275, while the births have only been 238, according to the Registrar's tables, making a decrease of 37, the remaining 15 probably resulting from changes of residence, &c.

4. The 275 deaths have been principally due to the following diseases. Fever takes, as is usual, the first place, but has only occasioned 58 deaths to 95 in 1866-67, and 158 in 1865-66.

5. I am unable to account for this striking reduction, except in the fact that a great many of the inhabitants now come to the Dispensary when attacked with Fever, instead of treating themselves in the native way as was formerly the case, and this appears to be more likely, as Dysentery which is the next in number, appears to have been considerably more fatal than in 1866-67. The past year was characterized by a scanty rainfall and the ground repeated-

ly went through the process of drying: it is very probable that decaying animal and vegetable emanations, exhaled under the influence of a powerful sun, have greatly conduced to the increase noted under this head, especially considering the manner in which the Burmans live; their houses surrounded by vegetation, and consequently in a great measure shut out from free access of air.

6. Bronchitis appears from the tables furnished to be the next in point of number. It appears from the returns to have proved most fatal in July and August and not as I should have expected in the cold season which here gives a daily thermometric variation of 35°. It seems however as far as the Returns shew that a constantly damp atmosphere has been more favourable to the production, or at least the fatality of this disease, than even the great daily variations in temperature which exist during the cold season.

7. Tetanus is stated to have caused 24 deaths, the only fatal case that came under my notice at the Dispensary was in an adult, and restuled from a lacerated bamboo wound. The disease does not appear so prevalent here as along the sea-coast.

8. A comparison of the various ages at which death occurred shews that 44 deaths of the total number took place within the first year of life, the average annual mortality between the

| | | | |
|---|---|---|---|
| 1st and 5th | year | amounts to | 14.25 |
| 5th and 10th | do. | do. | 8 |
| 10th and 15th | do. | do. | 2. |
| 15th and 20th | do. | do. | 3. 2 |
| 20th and 25th | do. | do. | 4. 2 |
| 25th and 30th | do. | do. | 4. 8 |
| 30th and 35th | do. | do. | 5. 2 |
| 35th and 40th | do. | do. | 2. 4 |

| | | | |
|---|---|---|---|
| 40th and 45th | year | amounts to | 1. 2 |
| 45th and 50th | do. | do. | 1. 2 |
| 50th and 55th | do. | do. | 2. 4 |
| 55th and 60th | do. | do. | 3. 8 |
| 60th and 65th | do. | do. | 1. 6 |
| 65th and 70th | do. | do. | . 8 |
| 70th and 75th | do. | do. | 3. 2 |

9. I have thus far simply given an analysis of the facts recorded in the Registrar's tables, they however in my opinion only furnish an approximate and very imperfect idea of the public health.

10. It is calculated that 25 per cent of all the deaths recorded in England occur during the first year of life, the Registrar's tablefor the past year however gives only 16 per cent as the ratio of infantile mortality, at Toungoo during the first year of life.

11. It has I believe been suggested by Dr. Lees that the sparse population of Burma is due not to any want of prolificity in the population but to the excessive mortality amongst Burmese children in early life, and considering their scanty clothing, exposure to all weathers, and lastly but perhaps chiefly, the indigestible food Burmese infants are fed with, from within a few days of their birth, it certainly does not appear probable that their death rate can compare favourably with that of infants in England. For the same reasons I am of opinion that the total mortality of the first 5 years of life, 36.72 per cent is considerably too low, the rate in England for the corresponding period being 42 per cent.

12. As however the Native Doctor of the Dispensary was appointed Registrar a short time previous to the close of the year under review, I have hopes that a more correct estimate may be arrived at from the current years tables.

13. I am thankful to say that during the past year, as in 1866-67, the station and town have been entirely free from Cholera.

14. As regards the birth rate I have but little to remark.

15. It however seems to me improbable that the table with which I have been furnished gives anything approaching to a correct estimate. The deaths are stated to have been (as has been already mentioned) much below the average, and that in such a year they should be so much in excess of the births is not at all likely.

16. It is probable that many deaths have been left unregistered, and this has also, I am inclined to think, been the case, but in a much greater ratio as regards the births.

17. The machinery at present employed is of the rudest character, but still a beginning has to be made, and I trust and hope that in the course of time, the attempt now made to arrive at information so important in its relation to Public Health, may yield more gratifying results.

CHARLES R. S. PARKER,
*Civil Surgeon.*

Toungoo, April 6th, 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* TOUNGOO, *for the year ending* 31*st March* 1868. *Population* 9,648 *Souls.*

| Months | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 22 | " | " | " | " | 4 | " | 43 | |
| | Females | 13 | " | " | .. | .. | 3 | 1 | | |
| May " | Males | 8 | " | " | .. | " | 1 | 1 | 23 | |
| | Females | 12 | " | " | " | " | 1 | .. | | |
| June " | Males | 9 | " | " | .. | " | " | " | 24 | |
| | Females | 15 | " | " | " | .. | .. | " | | |
| July " | Males | 11 | " | " | " | " | .. | 2 | 18 | |
| | Females | 5 | " | .. | " | " | .. | " | | |
| August " | Males | 5 | " | " | .. | " | 1 | " | 12 | |
| | Females | 3 | " | .. | .. | " | 1 | 2 | | |
| September " | Males | 8 | " | " | " | " | .. | " | 21 | |
| | Females | 11 | " | " | " | " | 1 | 1 | | |
| October " | Males | 2 | " | " | .. | .. | .. | " | 9 | |
| | Females | 7 | " | " | .. | " | .. | " | | |
| November " | Males | 5 | " | " | " | " | 1 | " | 10 | |
| | Females | 4 | .. | " | .. | " | .. | .. | | |
| December " | Males | 5 | .. | " | " | 1 | 1 | " | 14 | |
| | Females | 7 | " | " | .. | " | .. | " | | |
| Jan. 1868 | Males | 11 | " | " | .. | " | 3 | " | 24 | |
| | Females | 9 | " | " | " | " | 1. | " | | |
| Feb. " | Males | 8 | " | " | .. | " | " | " | 16 | |
| | Females | 8 | " | .. | " | " | " | " | | |
| March " | Males | 12 | " | " | 1 | .. | 1 | " | 24 | |
| | Females | 7 | " | " | 1 | .. | 2 | " | | |

A. McMAHON,
*Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* TOUNGOO, *for the year ending* 31*st March* 1868. *Population* 9,648 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | | |
| April 1867 | Males | 6 | " | .. | " | " | 4 | " | 20 | |
| | Females | 8 | " | " | " | " | 2 | " | | |
| May " | Males | 9 | " | .. | 1 | " | " | " | 21 | |
| | Females | 11 | " | " | " | " | " | " | | |
| June " | Males | 9 | " | " | 2 | 1 | 3 | " | 23 | |
| | Females | 7 | " | " | 1 | " | " | " | | |
| July " | Males | 18 | " | 1 | 2 | " | " | " | 33 | |
| | Females | 11 | " | " | " | " | 1 | " | | |
| August " | Males | 11 | " | " | 1 | " | 2 | 1 | 28 | |
| | Females | 9 | " | " | 2 | " | 2 | " | | |
| September " | Males | 14 | " | .. | " | " | 2 | " | 28 | |
| | Females | 12 | " | " | " | " | " | " | | |
| October " | Males | 11 | " | " | " | " | 2 | " | 23 | |
| | Females | 10 | " | " | " | " | " | " | | |
| November " | Males | 9 | " | 1 | " | " | 2 | " | 20 | |
| | Females | 7 | " | " | " | " | 1 | " | | |
| December " | Males | 10 | " | " | " | " | 3 | " | 17 | |
| | Females | 4 | " | " | " | " | " | " | | |
| January 1868 | Males | 8 | " | " | 1 | " | " | " | 22 | |
| | Females | 10 | " | " | " | " | 3 | " | | |
| February " | Males | 6 | " | " | " | " | " | " | 14 | |
| | Females | 8 | " | " | " | " | " | " | | |
| March " | Males | 8 | " | " | 1 | " | 1 | " | 26 | |
| | Females | 15 | " | " | " | " | " | " | | |

A. McMAHON,
*Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *in the* TOUNGOO *district during the year ending 31st March* 1868.

| Nature of Diseases. | Burmese. | | | Aracanese | | | Karens. | | | Shans. | | | Chinese. | | | Natives of India. | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Febris ... ... ... | 30 | 24 | 54 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | 33 | 25 | 58 | |
| Dysenteria ... ... | 12 | 16 | 28 | ,, | ,, | ,, | 1 | ,, | 1 | 2 | ,, | 2 | ,, | ,, | ,, | 5 | 1 | 6 | ,, | ,, | ,, | 20 | 17 | 37 | |
| Diarrhœa ... ... ... | 8 | 13 | 21 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 11 | 13 | 24 | |
| Bronchitis ... ... ... | 14 | 9 | 23 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | 1 | 1 | ,, | ,, | ,, | 6 | 3 | 9 | ,, | ,, | ,, | 21 | 13 | 34 | |
| Quinsy ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Senectus, or old age ... | 16 | 14 | 30 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 16 | 15 | 31 | |
| Rubeola or Measles... ... | 13 | 14 | 27 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 13 | 15 | 28 | |
| Abscessus ... ... ... | 1 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | |
| Tetanus ... ... ... | 11 | 10 | 21 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | ,, | ,, | ,, | 12 | 12 | 24 | |
| Lepra ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Ambustio ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | 2 | 2 | |
| Syphilis ... ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | |
| Vulnus incisum ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 3 | ,, | 3 | |
| Hydrophobia ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Asthenia ... ... ... | 7 | 4 | 11 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 8 | 4 | 12 | |
| Hœmatemesis ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Asthma ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | |
| Anasarca ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 3 | 1 | 4 | |
| Apoplexia ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Colica ... ... ... | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 3 | ,, | 3 | |
| Partus or child birth ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Drowned ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 2 | ,, | 2 | |
| Suicide ... ... ... | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | |
| Total ... | 119 | 112 | 231 | ,, | ,, | ,, | 2 | ,, | 2 | 8 | 3 | 11 | 1 | 1 | 2 | 19 | 9 | 28 | 1 | ,, | 1 | 150 | 125 | 275 | |

A. McMAHON, *Deputy Commissioner.*

# Form D.

*Return showing the* DEATHS, *at various ages among several races in the* TOUNGOO *District, during the year ending the* 31*st March* 1868.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | |
| Under 1 month ... ... | 10 | 9 | 19 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 3 | 6 | ,, | ,, | ,, | 13 | 12 | 25 | |
| do. 6 months ... ... | 3 | 5 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | 1 | 1 | ,, | ,, | ,, | 4 | 6 | 10 | |
| do. 1 year ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 4 | 1 | 5 | ,, | ,, | ,, | 6 | 3 | 9 | |
| From 1 ,, ... ... | 4 | 4 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | 2 | ,, | ,, | ,, | 6 | 5 | 11 | |
| ,, 2 ,, ... ... | 7 | 10 | 17 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 10 | 17 | |
| ,, 3 ,, ... ... | 10 | 7 | 17 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 11 | 9 | 20 | |
| ,, 4 ,, ... ... | 5 | 4 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | 4 | 9 | |
| ,, 5 ,, ... ... | 4 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | ,, | 4 | |
| 10 to 15 years ... ... | 4 | 5 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 5 | 5 | 10 | |
| 15 to 20 ,, ... ... | 9 | 6 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 10 | 6 | 16 | |
| 20 to 25 ,, ... ... | 10 | 9 | 19 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 11 | 10 | 21 | |
| 25 to 30 ,, ... ... | 8 | 11 | 19 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 2 | 5 | ,, | ,, | ,, | 11 | 13 | 24 | |
| 30 to 35 ,, ... ... | 5 | 14 | 19 | ,, | ,, | ,, | 2 | ,, | 2 | 1 | ,, | 1 | ,, | ,, | ,, | 4 | ,, | 4 | ,, | ,, | ,, | 12 | 14 | 26 | |
| 35 to 40 ,, ... ... | 4 | 3 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | 5 | ,, | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 3 | 12 | |
| 40 to 45 ,, ... ... | 4 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 6 | ,, | 6 | |
| 45 to 50 ,, ... ... | 2 | 4 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 4 | 6 | |
| 50 to 55 ,, ... ... | 11 | 1 | 12 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 11 | 1 | 12 | |
| 55 to 60 ,, ... ... | 3 | 5 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 3 | 6 | 9 | |
| 60 to 65 ,, ... ... | 4 | 4 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 4 | 8 | |
| 65 to 70 ,, ... ... | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | |
| 70 to 75 ,, ... ... | 7 | 9 | 16 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 9 | 16 | |
| Total ... | 119 | 112 | 231 | ,, | ,, | ,, | 2 | ,, | 2 | 8 | 3 | 11 | 1 | 1 | 2 | 19 | 9 | 28 | 1 | ,, | 1 | 150 | 125 | 275 | |

A. McMAHON,
*Deputy Commissioner.*

**ANNUAL REPORT upon the Registration Returns of BASSEIN, for the year ending 31st March 1868, by A. CALLAWAY NISBET, Civil Surgeon and Ex Officio, Health Officer of Bassein.**

It appears from these returns that the Births during the year were 896, the deaths 550, out of a population which according to last year's account I estimate to have been at the commencement of the year 16,079. Very considerable difficulty has been experienced I believe in correcting our census returns, especially in the remoter and more thinly peopled parts of the district and I am not sure that the exact amount of our town population has been quite settled beyond dispute. It is very improbable that our population has numerically speaking materially altered during the past year, our death rate may therefore be estimated relatively and it compares favorably with that of the previous year, that is to say it was at the rate of 34 per 1000 this year against 55 per 1000 last year.

2. The mortality appears to have been distributed as follows :—

| | | | | | |
|---|---|---|---|---|---|
| *According to Race.*— | Burmese | 465 | *According to Race.*— | Karens | 1 |
| | N. of India | 57 | | Aracanese | 5 |
| | Chinese | 10 | | Other Races | 12 |
| *According to Sex.*— | Males | 293 | *According to Sex.*— | Females | 257 |

*According to Age.*—Under one year including still born ... ..... 149

Over one and under five years ..... ..... 87

From five to seventy years old, the deaths were comparatively infrequent, 33 being the highest mortality of any one quiquennial period.

*According to season of the year.*—Fair weather. December, January, February, March, No. of deaths..... ..... 179

Wet months, June, July, August, September... 218

Spring and fall. April, May, October, November 153

*According to causes of death.*—Miasmatic :—

Fever ..... ..... ..... ..... 69

| | |
|---|---|
| Cholera ..... | 30 |
| Dysentery ..... | 75 |
| Diarrhœa ..... | 10 |
| Croup ..... | 58 |
| Rheumatism ..... | 74 |
| Small pox ..... | 10 |

Deaths connected with Parturition :—

| | |
|---|---|
| Sill-born ..... | 43 |
| Child-birth. ..... | 0 |

Pulmonary :—

| | |
|---|---|
| Breastpang ..... | 3 |
| Consumption ..... | 2 |
| Cough ..... | 5 |
| Asthma ..... | 2 |

Veneral 10, Old age 53, Dropsy 19, Uncertain 55, Snake bite 4, Accidents 5, Suicide 2,

Other specified causes :—

| | |
|---|---|
| Tetanus ..... | 1 |
| Peritonitis ..... | 1 |
| Cramp ..... | 12 |

Unascertained causes of death 7.

3. The year has not been marked by any severe epidemics. An outbreak of Asiatic Cholera occurred in December destroying 16 persons in the town during that month, and Sporadic cases occur from time to time now, as is the case every year here.

4. The most noteworthy features of the foregoing summary are :—

I. The death rate is again favorable to female life.

II. The mortality of children of tender years continues very large, nearly equalling (as it did last year when there appeared some well marked cause for it) half the gross mortality of the year.

III. That one out of every 13 of the deaths occurred at the age of 70 and upwards, while the deaths from "Old age" were considerably more numerous.

IV. The mortality was greatest during the rains, lightest in the Spring and Fall, the latter result being unexpected and attributable probably to an outbreak of Cholera earlier than usual, viz: in the cold weather.

V. Miasmatic diseases continue very fatal, accounting for fully 3-5th of the gross mortality. This however is an improvement upon last year, and the same remark holds good as to the number of Stillborn children.

IV. The number of deaths from Venereal disease is noteworthy in connection with the Contagious Diseases Act which it has been proposed to make applicable to the Seaports of this province, a procedure suggested by me last year, and urged subsequently in a special report called for by the Commissioner of Pegu.

5. With regard to preventive measures suggested by these statistics I have little to add to the remarks embodied in my last year's and previous reports under that head. It would be unfair however not to notice the unmistakable signs of improvement which are beginning to appear in the native quarter of the town. The drainage is being gradually improved by deepening and clearing the sewers and filling in marshy boggy places too low for drainage. Houses too on an improved plan are slowly replacing the squallid hovels of previous years and the customary filth reservoirs under them are giving way to "pucka" floors and a purer domestic atmosphere.

6. Public Latrines upon the dry earth plan are in contemplation. These where completed and in use, require

an efficient conserving establishment to keep them free from nuisance, and this will hardly be effected I think in the absence of compulsory measures. So excellent a plan however, deserves a fair and persevering trial, and it is to be hoped the necessary staff of conservancy servants will not be wanting when they are required.

7. The Sanitary improvements before mentioned in speaking of the native dwellings are interesting as being spontaneous, the amount of pressure brought to bear upon the community with that object in view having been little or nothing but advice and persuasion, a little progress so made is worth much and promises better for the future than much more brilliant results proceeding from coercion.

A. CALLAWAY NISBET,
*Civil Surgeon,*
*Bassein.*

April, 18th 1868.

Forwarded to the Deputy Commissioner of Bassein on the 17th April 1868 with the Registration returns for 1867-68.

A. CALLAWAY NISBET,
*Civil Surgeon,*
*Bassein.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* BASSEIN, *for the year ending the* 31*st March* 1868. *Population* 16,733 *Souls.*

| MONTHS. | SEX. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 27 | 1 | ..... | ..... | ..... | 6 | ..... | 73 | |
| | Females ... | 37 | ..... | ..... | ..... | ..... | 2 | ..... | | |
| May " | Males ... | 24 | ..... | 1 | ..... | ..... | 5 | ..... | 62 | |
| | Females ... | 29 | ..... | ..... | ..... | ..... | 3 | ..... | | |
| June " | Males ... | 28 | ..... | ..... | ..... | ..... | 4 | ..... | 66 | |
| | Females ... | 27 | ..... | ..... | ..... | 3 | 3 | 1 | | |
| July " | Males ... | 25 | ..... | ..... | ..... | ..... | 3 | 1 | 64 | |
| | Females ... | 30 | ..... | ..... | ..... | 3 | 2 | ..... | | |
| August " | Males ... | 28 | ..... | ..... | ..... | 2 | 3 | ..... | 82 | |
| | Females ... | 40 | ..... | ..... | ..... | 1 | 8 | ..... | | |
| Sept. " | Males ... | 26 | ..... | ..... | ..... | ..... | 4 | 2 | 63 | |
| | Females ... | 26 | ..... | ..... | ..... | 3 | 2 | ..... | | |
| October " | Males ... | 31 | ..... | ..... | ..... | 2 | 3 | 1 | 81 | |
| | Females ... | 35 | ..... | ..... | ..... | 5 | 4 | ..... | | |
| Nov. " | Males ... | 30 | ..... | ..... | ..... | 2 | 3 | ..... | 73 | |
| | Females ... | 26 | 1 | ..... | ..... | 2 | 7 | 2 | | |
| Decr. " | Males ... | 34 | 1 | ..... | ..... | 1 | 3 | 2 | 88 | |
| | Females ... | 38 | 1 | ..... | ..... | 1 | 7 | ..... | | |
| Jan. 1868 | Males ... | 44 | 1 | ..... | ..... | ..... | 5 | 1 | 89 | |
| | Females ... | 35 | ..... | ..... | ..... | 1 | 2 | ..... | | |
| Feb. " | Males ... | 36 | ..... | ..... | ..... | ..... | 5 | ..... | 83 | |
| | Females ... | 34 | ..... | 1 | 1 | 1 | 4 | 1 | | |
| March " | Males ... | 25 | ..... | ..... | ..... | 2 | 7 | 1 | 72 | |
| | Females ... | 33 | ..... | 1 | ..... | ..... | 3 | ..... | | |

M. W. BEDDY,
*Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* BASSEIN, *for the year ending 31st March* 1868.—*Population* 16,733 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | 18 | ..... | ..... | ..... | 1 | 5 | ..... | 39 | |
| | Females | 12 | .. | ..... | ..... | ..... | 2 | 1 | | |
| May " | Males | 10 | .. | ..... | ..... | ..... | 3 | ..... | 32 | |
| | Females | 17 | .. | ..... | ..... | ..... | 1 | 1 | | |
| June " | Males | 25 | .. | ..... | ..... | 1 | 1 | ..... | 67 | |
| | Females | 32 | .. | ..... | ..... | 2 | 5 | 1 | | |
| July " | Males | 22 | .. | ..... | ..... | ..... | 4 | 1 | 51 | |
| | Females | 21 | .. | 1 | 1 | ..... | 1 | ..... | | |
| August " | Males | 17 | .. | ..... | ..... | ..... | 5 | ..... | 53 | |
| | Females | 26 | .. | ..... | ..... | ..... | 4 | 1 | | |
| Septr. " | Males | 23 | 1 | ..... | ..... | 1 | 3 | 1 | 47 | |
| | Females | 17 | 1 | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males | 20 | .. | ..... | ..... | 1 | 3 | ..... | 42 | |
| | Females | 17 | .. | ..... | ..... | ..... | ..... | 1 | | |
| Novr. " | Males | 19 | .. | ..... | 1 | 1 | 2 | ..... | 40 | |
| | Females | 16 | .. | ..... | ..... | 1 | ..... | ..... | | |
| Decr. " | Males | 36 | 1 | ..... | ..... | ..... | 3 | ..... | 72 | |
| | Females | 29 | .. | ..... | ..... | 1 | 2 | ..... | | |
| Jany. 1868. | Males | 18 | 2 | ..... | ..... | 1 | 6 | ..... | 45 | |
| | Females | 17 | .. | ..... | ..... | ..... | 1 | ..... | | |
| Feby. " | Males | 13 | .. | ..... | ..... | ..... | 3 | ..... | 29 | |
| | Females | 11 | .. | ..... | ..... | ..... | 2 | ..... | | |
| March " | Males | 18 | .. | ..... | 1 | ..... | ..... | 2 | 33 | |
| | Females | 11 | .. | ..... | ..... | ..... | 1 | ..... | | |

M. W. BEDDY.
*Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATH *among the several races in the district of* BASSEIN *during the year ending 31st March* 1868.

| Nature of Diseases. | Burmese. | | | Aracanese. | | | Karens. | | | Shans. | | | Chinese. | | | Natives of India. | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... ... | 21 | 13 | 34 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 2 | 4 | 6 | ,, | ,, | ,, | 25 | 18 | 43 | |
| Fever ... ... ... | 39 | 21 | 60 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 6 | 3 | 9 | ,, | ,, | ,, | 45 | 24 | 69 | |
| Dysentery ... ... | 29 | 32 | 61 | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | 2 | ,, | 2 | 5 | 2 | 7 | 2 | 1 | 3 | 40 | 35 | 75 | |
| Croup ... ... ... | 24 | 21 | 45 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | 7 | 2 | 9 | 1 | ,, | 1 | 33 | 25 | 58 | |
| Small Pox ... ... | 4 | 2 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 2 | 4 | ,, | ,, | ,, | 6 | 4 | 10 | |
| Rheumatism ... ... | 11 | 56 | 67 | 1 | ,, | 1 | ,, | 1 | 1 | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | ,, | 3 | 3 | 14 | 60 | 74 | |
| Film on eye ... ... | 10 | 5 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 11 | 6 | 17 | |
| Dropsy ... ... ... | 6 | 9 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | 1 | ,, | 1 | 9 | 10 | 19 | |
| Old age ... ... ... | 24 | 24 | 48 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 2 | 2 | 4 | ,, | ,, | ,, | 26 | 27 | 53 | |
| Venerial Ulcer ... ... | 4 | 3 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 2 | ,, | 2 | ,, | ,, | ,, | 7 | 3 | 10 | |
| A desease generally known among children ... | 15 | 19 | 34 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 1 | 3 | ,, | ,, | ,, | 17 | 21 | 38 | |
| Drowned ... ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | 1 | 1 | 2 | 1 | 3 | |
| Diarrhœa ... ... ... | 6 | 3 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 3 | 10 | |
| Consumption ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Cough ... ... ... | 4 | 1 | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | 1 | 5 | |
| Accidental death ... ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 2 | ,, | 2 | |
| Cramp ... ... ... | 9 | 1 | 10 | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 9 | 3 | 12 | |
| Pain in the breast ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 2 | 1 | 3 | |
| Cholera ... ... ... | 21 | 7 | 28 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 23 | 7 | 30 | |
| Snake bite ... ... ... | 3 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | |
| Asthma ... ... ... | 2 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | ,, | 2 | ,, | 2 | |
| Tetanus ... ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | |
| Suicide ... ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| Pretonitis ... ... ... | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 1 | ,, | 1 | |
| Desease of the Gum ... | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | |
| Other Diseases ... ... | 1 | 5 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 5 | 6 | |
| Total ... | 239 | 226 | 465 | 4 | 1 | 5 | ,, | 1 | 1 | 2 | 1 | 3 | 6 | 4 | 10 | 38 | 19 | 57 | 4 | 5 | 9 | 293 | 257 | 550 | |

M. W. BEDDY, *Deputy Commissioner.*

# Form D

*Return showing the* DEATHS, *at various ages among several races in the* BASSEIN *District, during the year ending the 31st March* 1868.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races. | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | |
| Still born ... ... | 21 | 13 | 34 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 2 | 4 | 6 | ,, | ,, | ,, | 25 | 18 | 43 | |
| Under 1 month ... ... | 15 | 16 | 31 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 3 | 2 | 5 | 1 | ,, | 1 | 19 | 19 | 38 | |
| do. 6 months ... ... | 21 | 10 | 31 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | 4 | 1 | 5 | ,, | ,, | ,, | 26 | 13 | 39 | |
| do. 1 year ... ... | 13 | 10 | 23 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 2 | 5 | ,, | 1 | 1 | 16 | 13 | 29 | |
| 1 to 5 years ... ... | 33 | 45 | 78 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 5 | 8 | ,, | 1 | 1 | 36 | 51 | 87 | |
| 5 to 10 ,, ... ... | 10 | 13 | 23 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 10 | 14 | 24 | |
| 10 to 15 ,, ... ... | 5 | 2 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | 2 | 7 | |
| 15 to 20 ,, ... ... | 8 | 5 | 13 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | 5 | 14 | |
| 20 to 25 ,, ... ... | 14 | 12 | 26 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 14 | 12 | 26 | |
| 25 to 30 ,, ... ... | 13 | 11 | 24 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 1 | ,, | 1 | 5 | ,, | 5 | ,, | 1 | 1 | 20 | 13 | 33 | |
| 30 to 35 ,, ... ... | 13 | 8 | 21 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 4 | 1 | 5 | 1 | ,, | 1 | 19 | 9 | 28 | |
| 35 to 40 ,, ... ... | 13 | 11 | 24 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | ,, | ,, | ,, | 17 | 11 | 28 | |
| 40 to 45 ,, ... ... | 11 | 7 | 18 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 5 | ,, | 5 | 1 | 1 | 2 | 17 | 8 | 25 | |
| 45 to 50 ,, ... ... | 6 | 10 | 16 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | 1 | 2 | 8 | 11 | 19 | |
| 50 to 55 ,, ... ... | 3 | 12 | 15 | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 2 | ,, | 2 | ,, | ,, | ,, | 8 | 12 | 20 | |
| 55 to 60 ,, ... ... | 6 | 4 | 10 | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 6 | 5 | 11 | |
| 60 to 65 ,, ... ... | 5 | 10 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 6 | 12 | 18 | |
| 65 to 70 ,, ... ... | 9 | 7 | 16 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | 1 | 1 | ,, | ,, | ,, | 10 | 8 | 18 | |
| 70 and upwards ... ... | 20 | 20 | 40 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 1 | 3 | ,, | ,, | ,, | 22 | 21 | 43 | |
| Total ... | 239 | 226 | 465 | 4 | 1 | 5 | ,, | 1 | 1 | 2 | 1 | 3 | 6 | 4 | 10 | 38 | 19 | 57 | 4 | 5 | 9 | 293 | 257 | 550 | |

M. W. BEDDY,
*Deputy Commissioner.*

**No. 126.**

To

A. J. COWIE ESQUIRE, M. D.

*Sanitary Commissioner,*
*British Burma, Rangoon.*

**Dated Maulmain the 18th May 1868.**

SIR,

I have the honor to forward herewith the Returns of Births and Deaths for the year 1867-68 together with the Civil Surgeon's Report.

2. On looking over the returns for the past two years, I see that the correctness of these statistics has always been doubted from the fact that the proportion of births and deaths are so small compared with the population of the town. The very great proportion of males born is also a feature which has before elicited remark.

3. It has been suggested that the births of female children is sometimes concealed, but I do not see any grounds for such supposition.

4. The constant low death rate would I think indicate the high state of salubrity the town enjoys.

5. Without pretending to assume that the returns are perfect I would state that I have taken every precaution to make them as correct as possible with the means at my disposal.

I have the honor to be
Sir,
Your most obedient servant,

J. K. MACRAE,
*Magistrate, Maulmain.*

**REMARKS on the Annual Return of BIRTHS and DEATHS in the Town of MAULMAIN, for the year 1867-68.**

A. The total number of Births this year has been Males 618, Females 405, total 1,023, which is less than that of last year, (1,285), but more satisfactory than it, in being in excess of Deaths.

The following comparative table will shew exactly in which parts of the community the births exceed the deaths, or vice versa.

| Year. | Race. | Burmese | | Karens | | Shans | | Chinese | | Natives of India | | Other Races | | Total | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sex. | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | |
| 1866-67. | Births - - | 592 | 475 | 0 | 0 | 8 | 10 | 16 | 17 | 67 | 50 | 35 | 15 | 718 | 567 | Excess of Deaths 44 |
| | Deaths - - | 505 | 388 | 2 | 0 | 14 | 11 | 20 | 14 | 247 | 75 | 36 | 17 | 824 | 505 | |
| | Excess of Births - | 87 | 87 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 62 | |
| | Excess of Deaths - | 0 | 0 | 2 | 0 | 6 | 1 | 4 | 0 | 180 | 25 | 1 | 2 | 106 | 0 | |
| 1867-68. | Births - - | 530 | 359 | 2 | 0 | 8 | 5 | 14 | 6 | 36 | 28 | 28 | 7 | 618 | 405 | Excess of Births 33 |
| | Deaths - - | 344 | 302 | 1 | 2 | 12 | 4 | 29 | 4 | 216 | 43 | 24 | 9 | 626 | 364 | |
| | Excess of Births - | 186 | 57 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 41 | |
| | Excess of Deaths - | 0 | 0 | 0 | 2 | 4 | 0 | 15 | 0 | 180 | 15 | 0 | 2 | 8 | 0 | |

The Burmese appear to considerable advantage in this table. Their excess of Births over Deaths is well marked, and the excess this year being chiefly in males is a point of good omen.

The great excess of Deaths over Births among Natives of India, and others, is doubtless to be explained by their

not bringing their wives with them. In the Regiment which is included in the return, we have, at all events, an example of deaths unbalanced by any births.

B. The return of Deaths is satisfactory if true :— only 990 deaths this year, against 1329 last year ; or taking the population each year at 65,500, 15 per 1000 this year against 20 last. I am afraid the 15 per 1000 is rather below the truth.

D. The return shewing the Deaths at various ages contains nothing unusual. There are always more deaths between 25 and 30, simply because there are more people of that age in the population. The Deaths from 1 year to 5, among the Burmese are very high, but then 4 years at that time of life is a long period to include under one heading.

C. The chief feature in the return shewing the causes of death, is, the almost entire absence of Deaths from Small pox, and the complete absence of deaths from Cholera.

WM. J. BUSTEED, M. D.,
*Offg : Civil Surgeon,*
*Maulmain.*

Maulmain,
28th April 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* MAULMAIN, *for the year ending* 31*st March* 1868. *Population* 65,566 *Souls.*

| Months | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 22 | " | " | " | " | 1 | 4 | 44 | |
| | Females | 14 | " | " | " | .. | 2 | 1 | | |
| May " | Males | 39 | " | " | 1 | 1 | 5 | 1 | 64 | |
| | Females | 14 | " | " | " | " | 1 | 2 | | |
| June " | Males | 62 | " | " | " | 1 | 2 | 3 | 108 | |
| | Females | 34 | " | " | " | " | 6 | " | | |
| July " | Males | 59 | " | " | 2 | " | 6 | 1 | 110 | |
| | Females | 36 | " | .. | " | 2 | 4 | " | | |
| August " | Males | 49 | " | 1 | " | 2 | 3 | " | 89 | |
| | Females | 32 | " | .. | " | 1 | 1 | " | | |
| September " | Males | 56 | " | " | 1 | 4 | 3 | 6 | 115 | |
| | Females | 41 | " | " | 1 | " | 2 | 1 | | |
| October " | Males | 45 | " | 1 | 2 | 1 | 5 | " | 88 | |
| | Females | 30 | " | " | 1 | " | 3 | " | | |
| November " | Males | 54 | " | " | 1 | " | 3 | 1 | 94 | |
| | Females | 34 | " | " | " | " | 1 | " | | |
| December " | Males | 29 | " | " | " | 2 | 2 | 2 | 55 | |
| | Females | 15 | " | " | 1 | 1 | 3 | " | | |
| Jan. 1868 | Males | 38 | " | " | " | " | 1 | 6 | 90 | |
| | Females | 39 | " | " | 1 | 1 | 3 | 1 | | |
| Feb. " | Males | 35 | " | " | 1 | " | 2 | 1 | 69 | |
| | Females | 27 | " | .. | 1 | 1 | 1 | " | | |
| March " | Males | 42 | " | " | " | 3 | 3 | 3 | 97 | |
| | Females | 43 | " | " | " | " | 1 | 2 | | |

Magistrate's Office,
Maulmain, 24th April, 1868.

J. K. MACRAE,
*Magistrate.*

## Form B.

*Registration Return of* DEATHS *in the Town of* MAULMAIN, *for the year ending* 31*st March* 1868. *Population* 65,566 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 19 | " | " | 1 | " | 18 | 2 | 58 | |
| | Females | 13 | " | 1 | " | " | 2 | 2 | | |
| May " | Males | 24 | " | .. | 1 | " | 9 | 2 | 53 | |
| | Females | 14 | " | " | " | 1 | 2 | " | | |
| June " | Males | 40 | " | " | 1 | 6 | 11 | 1 | 101 | |
| | Females | 37 | " | 1 | " | " | 4 | " | | |
| July " | Males | 56 | " | " | " | 3 | 14 | 2 | 114 | |
| | Females | 36 | " | " | 2 | " | 1 | " | | |
| August " | Males | 42 | " | " | 2 | 5 | 23 | 4 | 111 | |
| | Females | 28 | " | " | " | 2 | 4 | 1 | | |
| September " | Males | 33 | " | .. | 1 | 1 | 11 | 2 | 78 | |
| | Females | 29 | " | " | " | " | 1 | " | | |
| October " | Males | 28 | " | 1 | " | 3 | 22 | 2 | 97 | |
| | Females | 35 | " | " | " | " | 3 | 3 | | |
| November " | Males | 28 | " | " | " | 3 | 31 | 1 | 92 | |
| | Females | 25 | " | " | " | " | 2 | 2 | | |
| December " | Males | 21 | " | " | 2 | 3 | 17 | 2 | 76 | |
| | Females | 27 | " | " | " | " | 4 | " | | |
| January 1868 | Males | 14 | " | " | 2 | 1 | 24 | 3 | 66 | |
| | Females | 16 | " | " | " | " | 5 | 1 | | |
| February " | Males | 19 | " | " | 2 | 2 | 13 | " | 67 | |
| | Females | 24 | " | " | 1 | " | 6 | " | | |
| March " | Males | 20 | " | " | " | 2 | 23 | 3 | 77 | |
| | Females | 18 | " | " | 1 | 1 | 9 | " | | |

Magistrate's Office,
Maulmain, 24th April, 1868.

J. K. MACRAE,
*Magistrate.*

## Form C.

*Return showing the supposed or ascertained causes of* DEATH *among the several races in British Burmah for the year ending 31st March 1868.*

| Names of Diseases. | Burmese. | | | Aracanese | | | Karens. | | | Shans. | | | Chinese | | | Natives of India. | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Abscess ... ... | 1 | 2 | 3 | " | " | " | " | " | " | " | " | " | " | " | " | 3 | " | 3 | " | " | " | 4 | 2 | 6 | |
| Accidents ... ... | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 2 | 1 | 3 | |
| Ague ... ... | " | " | " | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | |
| Anasarca ... ... | 7 | 4 | 11 | " | " | " | " | " | " | " | " | " | " | " | " | 13 | 3 | 16 | " | 1 | 1 | 20 | 8 | 28 | |
| Asthma ... ... | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 2 | " | 2 | " | " | " | 3 | " | 3 | |
| Atrophy ... ... | 44 | 26 | 70 | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 12 | 4 | 16 | 3 | " | 3 | 60 | 31 | 91 | |
| Bite of reptile ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 | |
| Bronchitis ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 3 | " | 3 | " | 1 | 1 | 3 | 1 | 4 | |
| Child birth ... ... | " | 15 | 15 | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | 1 | 1 | " | 17 | 17 | |
| Consumption ... ... | 2 | 1 | 3 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 2 | " | 2 | 5 | 2 | 7 | |
| Convulsion ... ... | 6 | 6 | 12 | " | " | " | " | " | " | 1 | " | 1 | 1 | " | 1 | 1 | 1 | 2 | 4 | " | 4 | 13 | 7 | 20 | |
| Cough ... ... | 7 | 6 | 13 | " | " | " | " | " | " | 2 | 1 | 3 | 2 | " | 2 | 4 | " | 4 | 1 | 1 | 2 | 16 | 8 | 24 | |
| Disease of the lungs ... | " | 1 | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 3 | " | 3 | 4 | 1 | 5 | |
| Diarrhoea ... ... | 41 | " | 41 | " | " | " | " | " | " | 2 | " | 2 | 3 | " | 3 | 25 | " | 25 | " | " | " | 71 | " | 71 | |
| Drowned ... ... | 5 | " | 5 | " | " | " | " | " | " | " | " | " | " | " | " | 2 | " | 2 | " | " | " | 7 | " | 7 | |
| Dysentery ... ... | 9 | 10 | 19 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 16 | 1 | 7 | 2 | " | 2 | 28 | 11 | 39 | |
| Dyspepsia ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 | |
| Female irregularities ... | " | 61 | 61 | " | " | " | " | " | " | " | 2 | 2 | " | " | " | " | 11 | 11 | " | 1 | 1 | " | 75 | 75 | |
| Fevers ... ... | 135 | 82 | 217 | " | " | " | " | " | " | 4 | " | 4 | 12 | 2 | 14 | 92 | 8 | 100 | 3 | 4 | 7 | 246 | 96 | 342 | |
| Fits ... ... | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 4 | 3 | 7 | " | " | " | 5 | 3 | 8 | |
| Fracture ... ... | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 1 | " | 1 | 1 | " | 1 | 4 | " | 4 | |
| Heart disease ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 1 | 3 | " | " | " | 2 | 1 | 3 | |
| Measles ... ... | 3 | 9 | 12 | " | " | " | " | " | " | " | " | " | 1 | " | " | 2 | 4 | 6 | " | " | " | 6 | 13 | 19 | |
| Old age ... ... | 58 | 68 | 126 | " | " | " | " | " | " | " | 1 | 1 | 6 | 1 | 1 | 18 | 5 | 23 | 2 | " | 2 | 84 | 75 | 159 | |
| Paralysis ... ... | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | 7 | 2 | " | 2 | " | " | " | 3 | " | 3 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Poisoned ... ... | " | 1 | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | | 1 | 2 |
| Rheumatism ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | " | 2 | " | " | " | 2 | " | 2 |
| Small pox ... ... | 3 | 1 | 4 | " | " | " | " | 1 | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 4 | 2 | 6 |
| Sore throat ... ... | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 |
| Still born ... ... | 11 | 6 | 17 | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 1 | " | 1 | 3 | " | 3 | 16 | 6 | 22 |
| Syphilis ... ... | " | 1 | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 1 | 1 | 22 |
| Suicidal ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 |
| Ulcers ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | " | 1 |
| Venerial ... ... | 6 | " | 6 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 4 | " | 4 | " | " | " | 11 | " | 11 |
| | 344 | 302 | 646 | " | " | " | 1 | 2 | 3 | 12 | 4 | 16 | 29 | 4 | 33 | 216 | 43 | 250 | 24 | 9 | 33 | 626 | 364 | 990 |

Magistrate's Office.,
Maulmain,
The 24th April 1868.

J. K. MACRAE,
*Magistrate.*

# Form D.

*Return showing the* DEATHS, *at various ages among the several races in* BRITISH BURMAH, *for the year* 1867-68.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... | 11 | 6 | 17 | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 3 | ,, | 3 | 16 | 6 | 22 | |
| Under 1 month ... ... | 15 | 9 | 24 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | ,, | 1 | 1 | 3 | 4 | 4 | ,, | 4 | 22 | 12 | 34 | |
| do. 6 months ... ... | 18 | 9 | 27 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 7 | 2 | 9 | 4 | 1 | 5 | 31 | 12 | 43 | |
| do. 1 year ... ... | 9 | 2 | 11 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | ,, | ,, | ,, | 11 | 2 | 13 | |
| 1 to 5 years ... ... | 32 | 22 | 54 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 10 | 6 | 16 | 3 | 1 | 4 | 46 | 30 | 76 | |
| 5 to 10 ,, ... ... | 16 | 11 | 27 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | 3 | 3 | 6 | ,, | 1 | 1 | 20 | 16 | 36 | |
| 10 to 15 ,, ... ... | 7 | 6 | 13 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | 2 | 1 | ,, | 1 | ,, | ,, | ,, | 10 | 7 | 17 | |
| 15 to 20 ,, ... ... | 11 | 16 | 27 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 8 | 2 | 10 | ,, | 1 | 1 | 21 | 22 | 43 | |
| 20 to 25 ,, ... ... | 19 | 22 | 41 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 3 | ,, | 3 | 16 | 3 | 19 | 3 | 1 | 4 | 42 | 27 | 69 | |
| 25 to 30 ,, ... ... | 30 | 25 | 55 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | 2 | ,, | 2 | 40 | 3 | 43 | 2 | 1 | 3 | 77 | 29 | 106 | |
| 30 to 35 ,, ... ... | 29 | 21 | 50 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 29 | 7 | 36 | 1 | ,, | 1 | 61 | 28 | 89 | |
| 35 to 40 ,, ... ... | 19 | 17 | 36 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | 2 | 19 | 1 | 20 | ,, | 2 | 2 | 40 | 21 | 61 | |
| 40 to 45 ,, ... ... | 27 | 16 | 43 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 25 | 5 | 30 | ,, | ,, | ,, | 53 | 21 | 74 | |
| 45 to 50 ,, ... ... | 25 | 16 | 41 | ,, | ,, | ,, | ,, | ,, | ,, | 4 | ,, | 4 | 3 | ,, | 3 | 11 | ,, | 11 | 1 | 1 | 2 | 44 | 17 | 61 | |
| 50 to 55 ,, ... ... | 12 | 20 | 32 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 12 | ,, | 12 | 1 | ,, | 1 | 26 | 20 | 46 | |
| 55 to 60 ,, ... ... | 10 | 10 | 20 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 5 | 1 | 6 | ,, | ,, | ,, | 17 | 11 | 28 | |
| 60 to 65 ,, ... ... | 17 | 16 | 33 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 5 | ,, | 5 | ,, | ,, | ,, | 23 | 16 | 39 | |
| 65 to 70 ,, ... ... | 9 | 20 | 29 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 2 | ,, | 2 | 6 | 2 | 8 | 1 | ,, | 1 | 19 | 22 | 41 | |
| 70 and upwards ... ... | 28 | 38 | 66 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 3 | 1 | 4 | 15 | 5 | 20 | 1 | ,, | 1 | 47 | 45 | 92 | |
| Total ... | 344 | 302 | 646 | ,, | ,, | ,, | 1 | 2 | 3 | 12 | 4 | 16 | 29 | 4 | 33 | 216 | 43 | 259 | 24 | 9 | 9 | 626 | 364 | 990 | |

Magistrate Office,
Maulmain, 24th April, 1868,

J. K. MACRAE,
*Magistrate,*

**No. 19.**

To

THE SANITARY COMMISSIONER,

*British Burma,*

*Rangoon.*

**Dated Tavoy, the 2nd April 1868.**

SIR,

I have the honor to forward herewith the Registration returns of Births and Deaths within the Town of Tavoy for the year ending 31st March 1868.

2. The Population of the Town as shewn by the last return is 14,506.

3. The total number of births registered in the year ending 31st March 1868 is 407, being males 199 and females 208, showing the births of females exceeded those of males.

4. On comparing the returns of births of the past two years, the result is as follows:—

In 1866–67 births { Males 193, Females 183 } 376.

In 1867–68 births { Males 199, Females 208 } 407.

showing a more favourable return than last year.

5. The Thoogyee returns shew the population to be

Males 7,156, Females 7,350 } 14,506.

6. The number of deaths during the past year is shewn to be 273, being males 150 and females 123.

7. A comparison of the deaths for 1866-67 and 1867-68 shews as follows :—

| | | | |
|---|---|---|---|
| In 1866-67 deaths | Males | 157 | 297. |
| | Females | 140 | |
| In 1867-68 deaths | Males | 150 | 273. |
| | Females | 123 | |

8. There has been no Epedemic of any kind, and the year has been generally a healthy one but the hot weather in April carried off a good number of the young children under 5 years old.

9. The principal causes of deaths are entered as Fever and Diarrhœa.

10. The average age at death of these 273 is 30 years.

11. The ratio of births and deaths to population stand thus :—

| *Population.* | *Births to Population.* | *Deaths to Population.* |
|---|---|---|
| 14,506. | 28 per 1,000. | 18 per 1,000. |

I have the honor to be,

Sir,

Your most obedient servant,

G. FAITHFULL,

*Deputy Commissioner, Tavoy.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* TAVOY, *for the year ending the* 31*st March* 1868. *Population* 14,506 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | 6 | ..... | ..... | ..... | 1 | ..... | ..... | 22 | |
| | Females ... | 13 | ..... | ..... | ..... | 1 | 1 | ..... | | |
| May " | Males ... | 12 | ..... | ..... | ..... | 2 | ..... | 1 | 31 | |
| | Females ... | 15 | ..... | ..... | 1 | 3 | ..... | ..... | | |
| June " | Males ... | 14 | ..... | ..... | ..... | 3 | 1 | ..... | 26 | |
| | Females ... | 5 | ..... | ..... | ..... | 3 | ..... | ..... | | |
| July " | Males ... | 7 | ..... | ..... | ..... | 1 | ..... | ..... | 20 | |
| | Females ... | 10 | ..... | ..... | ..... | ..... | 1 | 1 | | |
| August " | Males ... | 15 | ..... | ..... | 1 | 3 | 3 | ..... | 33 | |
| | Females ... | 6 | ..... | ..... | ..... | 3 | 1 | 1 | | |
| Sept. " | Males ... | 7 | ..... | ..... | ..... | ..... | 1 | ..... | 20 | |
| | Females ... | 8 | ..... | ..... | ..... | 3 | 1 | ..... | | |
| October " | Males ... | 9 | ..... | ..... | ..... | ..... | 1 | ..... | 25 | |
| | Females ... | 12 | ..... | ..... | ..... | 2 | 1 | ..... | | |
| Nov. " | Males ... | 8 | ..... | ..... | ..... | ..... | 1 | ..... | 23 | |
| | Females ... | 10 | ..... | ..... | ..... | 2 | 2 | ..... | | |
| Decr. " | Males ... | 20 | ..... | ..... | ..... | 1 | ..... | ..... | 45 | |
| | Females ... | 20 | ..... | ..... | ..... | 3 | 1 | ..... | | |
| Jan. 1868 | Males ... | 18 | ..... | ..... | ..... | 2 | 1 | ..... | 41 | |
| | Females ... | 18 | ..... | ..... | ..... | ..... | 2 | ..... | | |
| Feb. " | Males ... | 31 | ..... | ..... | ..... | 2 | 1 | ..... | 60 | |
| | Females ... | 20 | ..... | ..... | ..... | 3 | 3 | ..... | | |
| March " | Males ... | 21 | ..... | ..... | ..... | 2 | 3 | ..... | 58 | |
| | Females ... | 25 | ..... | ..... | ..... | 5 | 2 | ..... | | |

Tavoy,
The 2nd April, 1868.

G. FAITHFULL,
*Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* TAVOY, *for the year ending* 31*st March* 1868.—*Population* 14,506 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India | Other Races | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | 10 | ..... | ..... | ..... | 7 | 2 | ..... | 30 | |
| | Females | 11 | .. | ..... | ..... | ..... | ..... | ..... | | |
| May " | Males | 9 | .. | ..... | ..... | 1 | 1 | ..... | 14 | |
| | Females | 3 | .. | ..... | ..... | ..... | ..... | ..... | | |
| June " | Males | 7 | .. | ..... | ..... | 3 | 2 | ..... | 23 | |
| | Females | 9 | .. | ..... | ..... | 2 | ..... | ..... | | |
| July " | Males | 11 | .. | ..... | ..... | 2 | 3 | ..... | 28 | |
| | Females | 9 | .. | ..... | ..... | 3 | ..... | ..... | | |
| August " | Males | 11 | .. | ..... | ..... | 1 | 1 | ..... | 25 | |
| | Females | 10 | .. | 1 | ..... | ..... | 1 | ..... | | |
| Septr. " | Males | 6 | ..... | ..... | ..... | ..... | ..... | 1 | 19 | |
| | Females | 12 | ..... | ..... | ..... | ..... | ..... | ..... | | |
| October " | Males | 9 | .. | ..... | ..... | ..... | ..... | ..... | 16 | |
| | Females | 7 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Novr. " | Males | 7 | .. | ..... | ..... | 2 | ..... | ..... | 20 | |
| | Females | 9 | .. | ..... | ..... | 1 | 1 | ..... | | |
| Decr. " | Males | 11 | ..... | ..... | ..... | 1 | 1 | ..... | 28 | |
| | Females | 15 | .. | ..... | ..... | ..... | ..... | ..... | | |
| Jany. 1868. | Males | 10 | ..... | ..... | ..... | ..... | ..... | 1 | 22 | |
| | Females | 9 | .. | ..... | ..... | ..... | 2 | ..... | | |
| Feby. " | Males | 11 | .. | ..... | ..... | 1 | 1 | ..... | 25 | |
| | Females | 11 | .. | ..... | ..... | 1 | ..... | ..... | | |
| March " | Males | 13 | .. | ..... | 1 | ..... | 2 | 1 | 23 | |
| | Females | 6 | .. | ..... | ..... | ..... | ..... | ..... | | |

Tavoy,
2nd April, 1868.

G. FAITHFULL,
*Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* TAVOY *during the year ending* 31*st March* 1868.—*Population* 14,506 *Souls.*

| Nature of Disease. | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Total Males and Females. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Fever ..... ..... ..... | 57 | 59 | 116 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 1 | 9 | 8 | 2 | 10 | 1 | ... | 1 | 74 | 62 | 136 |
| Diarrhœa ... ..... ..... | 22 | 17 | 39 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 2 | 3 | 5 | ... | 1 | 1 | ... | ... | ... | 24 | 22 | 46 |
| Cough ..... ..... ..... | 12 | 10 | 22 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 3 | 1 | 4 | 1 | ... | 1 | ... | ... | ... | 17 | 11 | 28 |
| Tempenites ... ..... ..... | 5 | 3 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 1 | 3 | ... | ... | ... | ... | ... | ... | 7 | 4 | 11 |
| Colic ..... ..... ..... | 5 | 6 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 | ... | ... | ... | 1 | ... | 1 | 9 | 6 | 15 |
| Still born ... ..... ..... | 9 | 6 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 2 | ... | ... | ... | 10 | 8 | 18 |
| Bubo ..... ..... ..... | 1 | ..... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 2 | ... | 2 |
| Snake bite ... ..... ..... | 1 | ..... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Child birth ... ..... ..... | ..... | 3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 |
| Dysentery ... ..... ..... | 3 | 6 | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | 1 | ... | 1 | 6 | 6 | 12 |
| Drowned ... ..... ..... | ..... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Total ..... | 115 | 111 | 226 | ... | ... | ... | ... | 1 | 1 | 1 | ... | 1 | 18 | 7 | 25 | 13 | 4 | 17 | 3 | ... | 3 | 150 | 123 | 273 |

Tavoy, the 2nd April 1868.

G. FAITHFULL, *Deputy Commissioner.*

# Form D.

*Return showing the* DEATHS, *at various ages among the several races in the Town of* TAVOY *during the year ending 1st March* 1868.

| Ages. | Burmese. | | | Aracanese. | | | Karens. | | | Shans. | | | Chinese. | | | N. of India. | | | Other Races. | | | Grand Total. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... | 9 | 6 | 15 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 1 | 1 | 2 | " | " | " | 10 | 8 | 18 | |
| Under 1 month ... ... | 4 | 4 | 8 | " | " | " | " | " | " | " | " | " | 3 | 1 | 4 | " | " | " | " | " | " | 7 | 5 | 12 | |
| do. 6 months ... ... | 6 | 8 | 14 | " | " | " | " | " | " | " | " | " | 2 | 3 | 5 | 1 | " | 1 | " | " | " | 9 | 11 | 20 | |
| do. 1 year ... ... | 6 | 1 | 7 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 1 | " | 1 | " | " | " | 8 | 1 | 9 | |
| 1 to 5 years ... ... | 30 | 18 | 48 | " | " | " | " | " | " | " | " | " | 1 | 2 | 3 | " | " | " | " | " | " | 31 | 20 | 51 | |
| 5 to 10 " ... ... | 2 | 1 | 3 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 3 | 1 | 4 | |
| 10 to 15 " ... ... | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | |
| 15 to 20 " ... ... | 3 | " | 3 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 4 | " | 4 | |
| 20 to 25 " ... ... | 5 | 9 | 14 | " | " | " | " | 1 | 1 | " | " | " | " | " | " | 1 | 1 | 2 | " | " | " | 6 | 11 | 17 | |
| 25 to 30 " ... ... | 5 | 10 | 15 | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | " | " | 5 | 11 | 16 | |
| 30 to 35 " ... ... | 5 | 3 | 8 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 1 | 1 | 2 | " | " | " | 7 | 4 | 11 | |
| 35 to 40 " ... ... | 5 | 5 | 10 | " | " | " | " | " | " | " | " | " | " | " | " | 3 | " | 3 | " | " | " | 8 | 5 | 13 | |
| 40 to 45 " ... ... | 5 | 3 | 8 | " | " | " | " | " | " | " | " | " | 2 | " | 2 | 1 | " | 1 | " | " | " | 8 | 3 | 11 | |
| 45 to 50 " ... ... | 5 | 1 | 6 | " | " | " | " | " | " | " | " | " | 3 | " | 3 | " | " | " | " | " | " | 8 | 1 | 9 | |
| 50 to 55 " ... ... | 1 | 2 | 3 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 2 | 3 | |
| 55 to 60 " ... ... | 2 | 3 | 5 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 3 | 3 | 6 | |
| 60 to 65 " ... ... | 8 | 8 | 16 | " | " | " | " | " | " | " | " | " | " | " | " | 2 | " | 2 | 2 | " | 2 | 12 | 8 | 20 | |
| 65 to 70 " ... ... | 1 | 8 | 9 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 8 | 9 | |
| 70 and upwards ... ... | 12 | 20 | 32 | " | " | " | " | " | " | 1 | " | 1 | 3 | " | 3 | 1 | " | 1 | 1 | " | 1 | 18 | 20 | 38 | |
| Total ... | 115 | 111 | 226 | " | " | " | " | 1 | 1 | 1 | " | 1 | 18 | 7 | 25 | 13 | 4 | 17 | 3 | " | 3 | 150 | 123 | 273 | |

Tavoy, 2nd April, 1868.

G. FAITHFULL, *Deputy Commissioner.*

**REPORT on the Returns of BIRTHS and DEATHS in the town of TAVOY, for the year ending 31st March, 1868.**

The number of the relative sexes born during this year is according to the return much more equal than in the former year, with which I have means to contrast them, and also much more in accordance with that prevails in Europe; the number of female children is this year in excess by 9.

2. I have again to call attention to the proportion of children returned as still born "viz: 18 out of 273 births recorded; this can only be accounted for by the barbarous mode in which midwifery cases are conducted amongst the Burmese. As excepting in very exceptional cases, the natives rarely resort to the advice of the civil Surgeon in parturition, I would suggest that if there is any tractate giving some idea of the process which would be inteligible to the Burmese, some should be forwarded to this station. I may also remark the great number of children dying between the ages of 1 and 5 years, improper diet and exposure to vicissitudes of weather are no doubt the chief causes and for this at present I see no remedy.

3. Of the 273 deaths recorded during the year only 3 of the individuals have been seen by myself; these were all patients admitted into the Hospital.

4. As to the correctness of the returns so far as the town generally is concerned, I am unable to give an opinion, nor do I think it possible the returns can be rendered under the proper heads, so as to be in any way reliable, until the Medical Officer is placed in charge of the registrations.

JOHN K. WHITAKER, M. D.,

*Civil Surgeon, Tavoy.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* TAVOY *for the year ending* 31*st March* 1868. *Population* 14,506. *Souls.*

| Name of the Quarter of the Town or Street where birth occurs. | Sex of Child. | Races. | | | | | | | | | Total. | | Grand Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese. | Arrakanese. | Karens. | Shans. | Chinese. | Natives of India. | Other Races. | &c. | &c. | Males. | Females. | |
| TOWN OF TAVOY.. | Males | 168 | ..... | .... | 1 | 17 | 12 | 1 | .. | .... | 199 | | 407 |
| | Females | 162 | ..... | .... | 1 | 28 | 15 | 2 | ... | .... | | 208 | |
| | Total | 330 | .... | ..... | 2 | 45 | 27 | 3 | ... | ..... | 199 | 208 | |

TAVOY,
The 10th April 1868.

JOHN K. WHITAKER M. D.
*Civil Surgeon Tavoy.*

## Form C.

*Registration Return of causes of* DEATHS *in the Town of* TAVOY, *for the year ending* 31*st March* 1868.

| Age | Burmese | | | Aracanese. | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| Still born ... ... ... | 9 | 6 | 15 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 2 | ... | ... | ... | 10 | 8 | 18 |
| Fevers ... ... ... | 57 | 59 | 116 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 1 | 9 | 8 | 2 | 10 | 1 | ... | 1 | 74 | 62 | 136 |
| Diarrhœa ... ... ... | 22 | 17 | 39 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 2 | 3 | 5 | ... | 1 | 1 | ... | ... | ... | 24 | 22 | 46 |
| Cough ... ... ... | 12 | 10 | 22 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 3 | 1 | 4 | ... | ... | ... | ... | ... | ... | 17 | 11 | 28 |
| Tympenitis.. ... ... | 5 | 3 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 1 | 3 | 1 | ... | 1 | ... | ... | ... | 7 | 4 | 11 |
| Colic ... ... ... | 5 | 6 | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 | ... | ... | ... | 1 | ... | 1 | 9 | 6 | 15 |
| Bubo ... ... ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 2 | ... | 2 |
| Snake bite ... ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Child birth ... ... | ... | 3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 |
| Dysentery ... ... | 3 | 6 | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | 1 | ... | 1 | 6 | 6 | 12 |
| Drown ... ... ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Total ... | 115 | 111 | 226 | ... | ... | ... | ... | 1 | 1 | 1 | ... | 1 | 18 | 7 | 25 | 13 | 4 | 17 | 3 | ... | 3 | 150 | 123 | 273 |

JOHN WHITAKER, M. D. *Civil Surg., Tavoy.*

# Form D.

*Return shewing the* DEATHS, *according to the ages in the Town of* TAVOY *for the year ending* 31*st March* 1868.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | N. of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | |
| Still born ... ... | 9 | 6 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 11 | 8 | 18 | |
| Under 1 month ... ... | 4 | 4 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 7 | 5 | 12 | |
| do. 6 months ... ... | 6 | 8 | 14 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | 1 | ,, | 1 | ,, | ,, | ,, | 9 | 11 | 20 | |
| do. 1 year ... ... | 6 | 1 | 7 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | 3 | 5 | 1 | ,, | 1 | ,, | ,, | ,, | 8 | 1 | 9 | |
| 1 to 5 years ... ... | 30 | 18 | 48 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 31 | 20 | 51 | |
| 5 to 10 ,, ... ... | 2 | 1 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 1 | 4 | |
| 10 to 15 ,, ... ... | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | |
| 15 to 20 ,, ... ... | 3 | ,, | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | 4 | ,, | 4 | |
| 20 to 25 ,, ... ... | 5 | 9 | 14 | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | 2 | ,, | ,, | ,, | 6 | 11 | 17 | |
| 25 to 30 ,, ... ... | 5 | 10 | 15 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 1 | ,, | ,, | ,, | 5 | 11 | 16 | |
| 30 to 35 ,, ... ... | 5 | 3 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 1 | 1 | 2 | ,, | ,, | ,, | 7 | 4 | 11 | |
| 35 to 40 ,, ... ... | 5 | 5 | 10 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | ,, | ,, | ,, | 8 | 5 | 13 | |
| 40 to 45 ,, ... ... | 5 | 3 | 8 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 1 | ,, | 1 | ,, | ,, | ,, | 8 | 3 | 11 | |
| 45 to 50 ,, ... ... | 5 | 1 | 6 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | ,, | 3 | ,, | ,, | ,, | ,, | ,, | ,, | 8 | 1 | 9 | |
| 50 to 55 ,, ... ... | 1 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 2 | 3 | |
| 55 to 60 ,, ... ... | 2 | 3 | 5 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | 3 | 6 | |
| 60 to 65 ,, ... ... | 8 | 8 | 16 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 2 | 2 | ,, | 2 | 12 | 8 | 20 | |
| 65 to 70 ,, ... ... | 1 | 8 | 9 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 8 | 9 | |
| 70 and upwards ... ... | 12 | 20 | 32 | ,, | ,, | ,, | ,, | ,, | ,, | 1 | ,, | 1 | 3 | ,, | 3 | 1 | ,, | 1 | 1 | ,, | 1 | 18 | 20 | 38 | |
| Total ... | 115 | 111 | 226 | ,, | ,, | ,, | ,, | 1 | 1 | 1 | ,, | 1 | 18 | 7 | 25 | 13 | 4 | 17 | 3 | ,, | 3 | 150 | 123 | 273 | |

JOHN WHITAKER, M. D.,
*Civil Surgeon, Tavoy.*

**REPORT upon the BIRTHS and DEATHS in the Town of MERGUI, for the year ending 31st March 1868.**

In comparison with those of the foregoing year, the present returns shew a monthly average as tabulated below:—

Monthly average.

| | | |
|---|---|---|
| 1866–67.11 months, Births | $30\frac{6}{11}$ | Total 336. |
| 1867–68.12 months, Births | $30\frac{5}{6}$ | Total 370. |
| 1866–67.11 months, Deaths | $20\frac{2}{3}$ | Total 248. |
| 1867–68.12 months, Deaths | $20\frac{1}{3}$ | Total 248. |

2. Exhibiting a slight increase of the Birth rate, and a decrease of the death rate.

Increase of Birth rate. Decrease of Death rate.

3. There is again a preponderance of male births:—

Preponderance of Male Births.

Male 200. Female 170.

4. Fever, as usual, heads the list of causes of death, with a total of 109. Of the whole number of deaths, 131 are those of children up to 10 years of age, 83 having died in their first year.

Causes of Deaths.

Infantile mortality.

5. I am unable to vouch for the accuracy of the returns supplied to me.

WALTER ABBEY,
*Civil Surgeon.*

Mergui District, 1st April 1868.

## Form A.

*Annual Return of* BIRTHS *in the Villages of the* MERGUI *District for the year* 1867-68, *ending* 31*st March* 1868.

| Births. | Sex. | Races. | | | | | Total. | | Grand Total | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Shans | Karens | Malays | Chinese | Male | Female | | |
| April 1867 | Males | 49 | 3 | 12 | " | " | 64 | " | 115 | |
| | Females | 38 | " | 13 | " | " | " | 51 | | |
| May " | Males | 40 | 3 | 5 | " | " | 48 | " | 72 | |
| | Females | 21 | 1 | 2 | " | " | " | 24 | | |
| June " | Males | 21 | 5 | 11 | " | " | 37 | " | 89 | |
| | Females | 31 | 5 | 16 | " | " | " | 52 | | |
| July " | Males | 32 | 1 | 7 | " | " | 40 | " | 60 | |
| | Females | 17 | " | 3 | " | " | " | 20 | | |
| August " | Males | 27 | 4 | 10 | 1 | " | 42 | " | 75 | |
| | Females | 22 | 4 | 4 | 3 | " | " | 33 | | |
| September " | Males | 18 | 6 | 5 | " | " | 29 | " | 57 | |
| | Females | 23 | 2 | 2 | 1 | " | " | 28 | | |
| October " | Males | 19 | 2 | 15 | 6 | 2 | 44 | " | 97 | |
| | Females | 26 | 5 | 14 | 5 | 3 | " | 53 | | |
| November " | Males | 15 | 5 | 1 | 1 | 1 | 23 | " | 47 | |
| | Females | 12 | 3 | 4 | 5 | " | " | 24 | | |
| December " | Males | 34 | 4 | 4 | 1 | " | 43 | " | 85 | |
| | Females | 34 | 2 | 5 | 1 | " | " | 42 | | |
| Jan. 1868 | Males | 45 | 3 | 4 | " | 4 | 56 | " | 104 | |
| | Females | 34 | 4 | 4 | 3 | 3 | " | 84 | | |
| Feb. " | Males | 28 | 7 | 12 | 2 | " | 49 | " | 86 | |
| | Females | 21 | 4 | 6 | 5 | 1 | " | 37 | | |
| March " | Males | 44 | 3 | 7 | 1 | " | 55 | " | 115 | |
| | Females | 51 | 2 | 6 | 1 | " | " | 60 | | |

Mergui District
The 1st April, 1868.

W. ABBEY
*Civil Surgeon, Mergui.*

## Form B.

*Annual Return of* DEATHS *in the Villages of the* MERGUI *District for the year* 1867-68, *ending* 31*st March*, 1868.

| Deaths. | Sex. | Races. | | | | | Total, | | Grand Total | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Shans | Karens | Malays | Chinese | Male | Female | | |
| April 1867 | Males | 11 | " | 4 | " | " | 15 | " | 40 | |
| | Females | 22 | 2 | 1 | " | " | " | 25 | | |
| May " | Males | 11 | 2 | 7 | " | " | 20 | " | 38 | |
| | Females | 16 | " | 2 | " | " | " | 18 | | |
| June " | Males | 15 | 5 | 8 | " | " | 28 | " | 48 | |
| | Females | 13 | 2 | 5 | " | " | " | 20 | | |
| July " | Males | 16 | " | 12 | " | " | 28 | " | 62 | |
| | Females | 17 | 3 | 14 | " | " | " | 34 | | |
| August " | Males | 13 | 1 | 5 | 1 | " | 20 | " | 46 | |
| | Females | 18 | 2 | 5 | 1 | " | " | 26 | | |
| September " | Males | 6 | " | 5 | " | " | 11 | " | 25 | |
| | Females | 11 | " | 1 | 2 | " | " | 14 | | |
| October " | Males | 11 | 2 | 4 | 4 | 3 | 24 | " | 62 | |
| | Females | 18 | 1 | 18 | 1 | " | " | 38 | | |
| November " | Males | 10 | 4 | 2 | 1 | " | 17 | " | 29 | |
| | Females | 7 | 2 | 3 | " | " | " | 12 | | |
| December " | Males | 21 | 3 | 7 | " | " | 31 | " | 57 | |
| | Females | 17 | 3 | 3 | 3 | " | " | 26 | | |
| January 1868 | Males | 25 | 3 | 3 | 1 | " | 32 | " | 57 | |
| | Females | 18 | 2 | 3 | 2 | " | " | 25 | | |
| February " | Males | 7 | " | 1 | 1 | 1 | 10 | " | 28 | |
| | Females | 7 | 4 | 6 | " | 1 | " | 18 | | |
| March " | Males | 5 | 1 | 4 | " | " | 10 | " | 25 | |
| | Females | 12 | 1 | 2 | " | " | " | 15 | | |

Mergui District,
The 1st April, 1868.

W. ABBEY,
*Civil Surgeon, Mergui.*

## Form A.

*Annual Return of* BIRTHS *in the Town of* MERGUI *District for the year* 1867-68 *from the* 1*st April* 2,867 *to* 31*st March* 1868.

| Months. | Sex. | Race. Burmese | Chinese | Musselmen | Hindoos | Europeans | E. Indians | Christians | Malays | | | | Total. Males | Females. | Grand Total. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | 16 | 3 | 1 | 3 | ,, | ,, | 1 | ,, | ,, | ,, | ,, | 24 | ,, | 40 | |
| | Females | 8 | 4 | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 16 | | |
| May ,, | Males | 10 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 12 | ,, | 24 | |
| | Females | 5 | 4 | 2 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 12 | | |
| June ,, | Males | 11 | 4 | 2 | 1 | ,, | ,, | ,, | 1 | ,, | ,, | ,, | 19 | ,, | 31 | |
| | Females | 9 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 12 | | |
| July ,, | Males | 6 | 4 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 11 | ,, | 21 | |
| | Females | 6 | ,, | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 10 | | |
| August ,, | Males | 10 | 1 | 1 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 14 | ,, | 18 | |
| | Females | 3 | ,, | ,, | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 4 | | |
| Septr. ,, | Males | 5 | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 7 | ,, | 16 | |
| | Females | 3 | 2 | 2 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 9 | | |
| Octr. ,, | Males | 13 | 1 | 4 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 18 | ,, | 30 | |
| | Females | 7 | 2 | 2 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 12 | | |
| Novr. ,, | Males | 12 | 2 | 3 | 3 | ,, | ,, | ,, | 1 | ,, | ,, | ,, | 21 | ,, | 39 | |
| | Females | 13 | 1 | ,, | 2 | ,, | 1 | 1 | ,, | ,, | ,, | ,, | ,, | 18 | | |
| Decr. ,, | Males | 15 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 18 | ,, | 39 | |
| | Females | 16 | 1 | 3 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 21 | | |
| Jan. 1868 | Males | 12 | 2 | 1 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 16 | ,, | 36 | |
| | Females | 12 | 3 | 2 | 2 | ,, | ,, | 1 | ,, | ,, | ,, | ,, | ,, | 20 | | |
| Feb. ,, | Males | 8 | 7 | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 17 | ,, | 36 | |
| | Females | 15 | 3 | 1 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 19 | | |
| March ,, | Males | 21 | ,, | 2 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 23 | ,, | 40 | |
| | Females | 12 | 2 | 3 | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 17 | | |

Mergui District
The 1st April 1868.

WALTER ABBEY,
*Civil, Surgeon Mergui.*

## Form C.

*Table exhibiting the different classes of Diseases from which death took place in the Town of* MERGUI *for the year* 1867-68.

| Class. | Order | Diseases. | No. of deaths. |
|---|---|---|---|
| 1 | 1 | Fevers ..... ..... ..... | 109 |
| 1 | 1 | Dysentery ..... ..... ..... | 12 |
| 1 | 1 | Diarhœa ..... ..... ..... | 9 |
| 1 | 1 | Childbed fever ..... ..... ..... | 6 |
| 1 | 1 | Morbilli ..... ..... ..... | 10 |
| 1 | 2 | Leprosy ..... ..... ..... | 1 |
| 1 | 2 | Syphilis ..... ..... ..... | 1 |
| 3 | 1 | Convulsion ..... ..... ..... | 41 |
| 3 | 1 | Encephalitis ..... ..... ..... | 1 |
| 3 | 3 | Asthma ..... ..... ..... | 4 |
| 3 | 3 | Bronchitis ..... ..... ..... | 10 |
| 3 | 4 | Dropsy ..... ..... ..... | 2 |
| 3 | 4 | Dyspepsia ..... ..... ..... | 2 |
| 3 | 5 | Nephritis ..... ..... ..... | 1 |
| 3 | 8 | Ulcus... ..... ..... ..... | 9 |
| 3 | 8 | Abscessus ..... ..... ..... | 7 |
| 4 | 2 | Partus Abortus ... ..... ..... | 3 |
| 4 | 1 | Still Born ..... ..... ..... | 11 |
| 4 | 3 | Senectus ..... ..... ..... | 8 |
| | | Sudden death..... ..... ..... | 1 |
| | | Total ..... | 248 |

Mergui District,
The 1st April 1868.

W. ABBEY.
*Civil Surgeon, Mergui.*

## Form D.

*Annual Return of* DEATHS *occurring among the various caste of the Natives &c., in the Town of* MERGUI *District, according to ages in Quinquinial period for the year* 1867-68, *from the* 1st *April* 1867 *to* 31st *March* 1868.

| Ages. | Burmese. | | | Chinese. | | | Mussulmen. | | | Hindoos. | | | Europeans. | | | Christians. | | | Malays. | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... | 7 | 4 | 11 | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 8 | 5 | 13 | |
| Under one year ... ... | 49 | 19 | 66 | 4 | 4 | 8 | 5 | 2 | 7 | " | " | " | " | " | " | " | 1 | 1 | 1 | " | 1 | 57 | 26 | 83 | |
| 1 to 5 years ... ... | 11 | 8 | 19 | 1 | 1 | 2 | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 13 | 9 | 22 | |
| 5 to 10 " ... .. | 3 | 4 | 7 | " | 1 | 1 | 2 | 2 | 4 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 6 | 7 | 13 | |
| 10 to 15 " ... ... | 4 | 2 | 6 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 5 | 2 | 7 | |
| 15 to 20 " ... ... | 1 | 1 | 2 | 1 | " | 1 | " | 1 | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | 4 | |
| 20 to 25 " ... ... | 2 | " | 2 | 1 | 1 | 2 | 1 | " | 1 | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 5 | 1 | 6 | |
| 25 to 30 " ... ... | 1 | 2 | 3 | " | " | " | " | " | " | 2 | " | 2 | " | " | " | " | " | " | " | " | " | 3 | 2 | 5 | |
| 30 to 35 " ... ... | 1 | 4 | 5 | " | " | " | " | 1 | 1 | " | 1 | 1 | " | " | " | " | " | " | " | " | " | 1 | 6 | 7 | |
| 35 to 40 " ... ... | 3 | 5 | 8 | 2 | " | 2 | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 6 | 5 | 11 | |
| 40 to 45 " ... .. | 3 | 2 | 5 | 2 | " | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 5 | 2 | 7 | |
| 45 to 50 " ... ... | 3 | 2 | 5 | " | " | " | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | " | " | 3 | 3 | 6 | |
| 50 to 55 " ... ... | 3 | " | 3 | " | " | " | " | 1 | 1 | 1 | " | 1 | 1 | " | 1 | " | " | " | " | " | " | 5 | 1 | 6 | |
| 55 to 60 " ... ... | 4 | 1 | 5 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 5 | 1 | 6 | |
| 60 to 65 " ... ... | 5 | 3 | 8 | 1 | " | 1 | 1 | 1 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | 7 | 4 | 11 | |
| 65 to 70 " ... ... | 3 | 3 | 6 | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 4 | 3 | 7 | |
| 70 upwards ... ... | 12 | 14 | 26 | 1 | " | 1 | 3 | 1 | 4 | " | 2 | 2 | " | " | " | 1 | " | 1 | " | " | " | 17 | 17 | 34 | |
| Total ... | 113 | 74 | 187 | 14 | 7 | 21 | 14 | 9 | 23 | 7 | 4 | 1 | 1 | " | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 152 | 96 | 248 | |

Mergui District,
The 1st April 1868.

WALTER ABBEY,
*Civil Surgeon, Mergui.*

REPORT on Registration of BIRTHS and DEATHS in the Town of SHOAY-GYEEN, during the year 1867-68.

The population of the Shoay-gyeen town has increased during the year under review, as compared with the previous year, being 7,688 against 7,610, for 1866-67 or an increase of 78 souls.

2. The total deaths registered during the year amounted to 199, and the births for the same period only 109, giving an excess of deaths over births 90.

3. The increase of population during the same period shows 78 souls, that number of strangers must have immigrated during the year.

4. Though it is possible that some births may have escaped registration, still the care that has been taken in ascertaining the facts would lead me to the belief that the numbers are correct.

5. The births in the year under review amounted to 109, being a birth rate of 14.17 per 1,000 of the population, against 85, or 11.16, which shows an increase of 24 or 3.01, over those of the corresponding period last year.

6. The number of deaths during the year amounts to 199, which shows an increase of 59 over that of the year previous, and gives a death rate of 25.88 per 1,000 living.

7. The death rate for children one year old and under is only 3.38 per 1,000. I have always been of opinion that infantile mortality is not great in this town. The death rate for all ages, from 5 years and upwards is 22.50 per 1,000, being seven fold that of the infantile death rate for one year old and under, which is particularly worthy of notice.

8. The disease highest in the list of fatal causes is fever, this disease carried off 18.86 per 1,000; next to it

comes Dysentery and Diarrhœa, these have destroyed 4.16 per 1,000, and from all other causes 2.86 per 1,000, care has been taken to make this as reliable as possible.

9. The rate of mortality in Shoay-gyeen town, has, as a rule, been high, and 1867-68 has proved no exception, although more favorable than 1865-66.

10. The town has been free from any epidemic during the past year. I attribute this immunity to the increased improvements that have been made by the municipal authorities; several beautiful roads have been made, the roads in general have been well drained and cleared of filth and rubbish. The general state of cleanliness in the town has been carefully attended to, and all suggestions regarding sanitary measures have been promptly executed.

G. J. COOPER,
*In Civil Medical Charge.*

Shoay-Gyeen, 1st April 1868.

## Form A.

*Registration Return of* BIRTHS *in the Town of* SHOAY GYEEN, *for the year ending the* 31*st March* 1867-68.

| Months. | Sex. | Races. East Indians and Europeans | Burmese | Mussulmen | Taline | Shans | Karens | Chinese | Hindoo | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | ..... | 7 | 1 | .... | 1 | .... | ..... | ..... | 17 | |
| | Females ... | ..... | 7 | ..... | 1 | .... | .... | ..... | ..... | | |
| May " | Males ... | ..... | 3 | ..... | .... | .... | .... | ..... | ..... | 6 | |
| | Females ... | 1 | 2 | ..... | .... | .... | .... | ..... | ..... | | |
| June " | Males ... | ..... | 5 | ..... | .... | .... | .... | 1 | ..... | 10 | |
| | Females ... | 1 | 2 | ..... | .... | .... | .... | ..... | 1 | | |
| July " | Males ... | 1 | 3 | ..... | .... | .... | .... | 2 | 1 | 12 | |
| | Females ... | ..... | 4 | ..... | 1 | .... | .... | ..... | ..... | | |
| August " | Males ... | ..... | 2 | 1 | .... | 1 | .... | 1 | 1 | 9 | |
| | Females ... | ..... | 2 | ..... | .... | 1 | .... | ..... | ..... | | |
| Sept. " | Males ... | ..... | 2 | ..... | .... | .... | .... | ..... | ..... | 4 | |
| | Females ... | ..... | 2 | ..... | .... | .... | .... | ..... | ..... | | |
| October " | Males ... | ..... | 5 | 1 | .... | .... | .... | ..... | ..... | 14 | |
| | Females ... | 2 | 6 | ..... | .... | .... | .... | ..... | ..... | | |
| Nov. " | Males ... | ..... | 2 | 2 | 1 | 1 | .... | ..... | ..... | 11 | |
| | Females ... | ..... | 5 | ..... | .... | .... | .... | ..... | ..... | | |
| Decr. " | Males ... | ..... | 3 | ..... | .... | .... | .... | ..... | ..... | 6 | |
| | Females ... | ..... | 3 | ..... | .... | .... | .... | ..... | ..... | | |
| Jan. 1868 | Males ... | ..... | 2 | ..... | .... | 1 | .... | ..... | ..... | 11 | |
| | Females ... | ..... | 8 | ..... | .... | .... | .... | ..... | ..... | | |
| Feb. " | Males ... | 1 | 2 | ..... | .... | .... | .... | ..... | ..... | 5 | |
| | Females ... | ..... | 2 | ..... | .... | .... | .... | ..... | ..... | | |
| March " | Males ... | ..... | 2 | ..... | .... | .... | .... | ..... | ..... | 4 | |
| | Females ... | ..... | 1 | ..... | .... | .... | .... | ..... | 1 | | |

Shoay Gyeen,
1*st April* 1868.

G. J. COOPER,
*In Civil Medical Charge, Shoay Gyeen.*

## Form B.

*Registration Return of* DEATHS *in the Town of* SHOAY GYEEN *for the year ending* 31*st March* 1867-68.

| Months. | Sex. | Races. | | | | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | East Indians and Europeans. | Burmese | Mussulmen | Hindoo | Taline | Shans | Chinese | Karens | Parsees | | | |
| April 1867. | Males | ..... | 7 | 1 | ... | 1 | ... | ... | ... | ... | ... | 18 | |
| | Females | ..... | 7 | ... | 1 | ... | 1 | ... | ... | .. | .... | | |
| May " | Males | ..... | 2 | ... | ... | ... | 1 | ... | ... | .. | .... | 5 | |
| | Females | ..... | 2 | ... | ... | ... | ... | ... | ... | .. | .... | | |
| June " | Males | ..... | 9 | ... | 2 | ... | ... | ... | 1 | .. | .... | 19 | |
| | Females | ..... | 7 | ... | ... | ... | ... | ... | ... | .. | .... | | |
| July " | Males | ..... | 11 | ... | ... | ... | 2 | ... | ... | .. | .... | 22 | |
| | Females | ..... | 7 | ... | ... | 1 | 1 | ... | ... | .. | .... | | |
| August " | Males | ..... | 7 | 1 | ... | ... | 1 | 1 | ... | .. | .... | 29 | |
| | Females | ..... | 17 | ... | ... | ... | ... | 1 | 1 | .. | .... | | |
| Septr. " | Males | ..... | 6 | ... | 1 | ... | ... | ... | ... | ... | .... | 23 | |
| | Females | ..... | 16 | ... | ... | ... | ... | ... | .. | ... | .... | | |
| October " | Males | ..... | 5 | 1 | 4 | ... | ... | ... | .. | ... | .... | 24 | |
| | Females | ..... | 14 | ... | ... | ... | ... | ... | .. | ... | .... | | |
| Novr. " | Males | ..... | 7 | ... | 2 | ... | ... | ... | .. | .. | .... | 23 | |
| | Females | ..... | 13 | 1 | ... | ... | ... | ... | .. | .. | .... | | |
| Decr. " | Males | ..... | 4 | ... | ... | ... | ... | ... | ... | .. | .... | 14 | |
| | Females | ..... | 9 | ... | 1 | ... | ... | ... | ... | .. | .... | | |
| Jany. 1868. | Males | ..... | 1 | 2 | ... | ... | ... | ... | ... | .. | .... | 12 | |
| | Females | ..... | 9 | ... | ... | ... | ... | ... | ... | .. | .... | | |
| Feby. " | Males | 1 | ..... | ... | ... | ... | ... | ... | ... | .. | .... | 5 | |
| | Females | ..... | 4 | ... | ... | ... | ... | ... | ... | .. | .... | | |
| March " | Males | ..... | 2 | ... | ... | ... | ... | ... | ... | .. | .... | 5 | |
| | Females | ..... | 3 | ... | ... | ... | ... | ... | ... | .. | .... | | |

Shoay Gyeen
1st April, 1868.

G. J. COOPER,
*In Civil Medical Charge, Shoay Gyeen.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* SHOAY-GYEEN *during the year ending* 31*st March* 1867-68.

| Class. | Order | | Nature of Disease. | East Indians & Europeans. | | | Burmese | | | Mussulmen | | | Hindoos | | | Talines | | | Shans | | | Chinese | | | Karens | | | Total. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. |
| I | 1 | Miasmatic ... | Febricula ... | ... | ... | ... | 44 | 80 | 124 | 2 | 1 | 3 | 8 | 1 | 9 | ... | 1 | 1 | 4 | 1 | 5 | 1 | 1 | 2 | 1 | ... | 1 | 60 | 85 | 145 |
| ,, | ,, | ,, ... | Diarrhœa ... | ... | ... | ... | ... | 3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 |
| ,, | ,, | ,, ... | Dysenteria ... | ... | ... | ... | 11 | 13 | 24 | 2 | ... | 2 | 1 | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 15 | 14 | 29 |
| ,, | 2 | Enthetic ... | Syphilis Secundaria | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| II | 1 | Diathetic ... | Anasarca ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| III | ,, | Nervous ... | Convulsio ... | ... | ... | ... | 1 | 2 | 3 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 | 4 |
| ,, | 4 | Digestive ... | Hepatitis ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| ,, | ,, | Do. ... | Dyspepsia ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| IV | 1 | Developmental of Children | Natus Mortuus. | ... | ... | ... | ... | 2 | 2 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 |
| ,, | 2 | Do. women ... | Abortus ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | 2 |
| ,, | 3 | Do. old people. | Senectus ... | ... | ... | ... | 1 | 6 | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 6 | 7 |
| V | 1 | Accident ... | Vulnus Incisum. | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 |

Shoay Gyeen
1st April, 1868.

G J. COOPER,
*In Civil Medical Charge, Shoay-Gyeen.*

## Form D.

*Return shewing the* DEATHS *of various ages among several races in the Town of* SHOAY GYEEN, *during the year ending 31st March* 1868.

| Ages. | East Indian & Europeans. | | | Burmese. | | | Mussulmen. | | | Hindoos. | | | Talines. | | | Shans. | | | Chinese. | | | Karens. | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... | " | " | " | " | 2 | 2 | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | " | " | " | " | " | " | 3 | 3 | |
| Under 1 month ... | " | " | " | " | 2 | 2 | 2 | " | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | 4 | |
| " 6 " ... | " | " | " | 3 | 10 | 13 | " | " | " | 2 | " | 2 | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 6 | 10 | 16 | |
| " 1 year ... | " | " | " | " | 3 | 3 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 3 | 3 | |
| 5 to 10 " ... | " | " | " | 15 | 19 | 34 | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | 1 | 1 | " | " | " | 15 | 21 | 36 | |
| 10 to 15 years ... | " | " | " | 5 | 5 | 10 | " | 1 | 1 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 6 | 6 | 12 | |
| 15 to 20 " ... | " | " | " | 3 | 4 | 7 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 3 | 4 | 7 | |
| 20 to 25 " ... | " | " | " | 4 | 5 | 9 | " | " | " | 2 | " | 2 | " | " | " | " | 1 | 1 | " | " | " | " | " | " | 6 | 6 | 12 | |
| 25 to 30 " ... | " | " | " | 12 | 9 | 21 | 1 | " | 1 | 3 | " | 3 | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 17 | 9 | 26 | |
| 30 to 35 " ... | " | " | " | 2 | 8 | 10 | 1 | " | 1 | " | " | " | " | " | " | " | " | " | " | " | " | 1 | " | 1 | 4 | 8 | 12 | |
| 35 to 40 " ... | " | " | " | 2 | 4 | 6 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 5 | 7 | |
| 40 to 45 " ... | 1 | " | 1 | 3 | 3 | 6 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | " | " | " | " | " | 4 | 4 | 8 | |
| 45 to 50 " ... | " | " | " | 1 | 3 | 4 | " | " | " | 2 | " | 2 | " | " | " | " | " | " | " | " | " | " | " | " | 3 | 3 | 6 | |
| 50 to 55 " ... | " | " | " | 2 | 4 | 6 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 4 | 6 | |
| 55 to 60 " ... | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 2 | " | 2 | |
| 60 to 65 " ... | " | " | " | 1 | 7 | 8 | 1 | " | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 3 | 7 | 10 | |
| 65 to 70 " ... | " | " | " | 1 | " | 1 | " | " | " | " | " | " | 1 | " | 1 | " | " | " | " | " | " | " | " | " | 2 | " | 2 | |
| 70 upwards ... | " | " | " | 6 | 20 | 26 | " | " | " | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | " | " | 6 | 21 | 27 | |
| Total ... | 1 | " | 1 | 61 | 108 | 169 | 5 | 1 | 6 | 9 | 2 | 11 | 1 | 1 | 2 | 4 | 2 | 6 | 1 | 1 | 2 | 1 | 1 | 2 | 83 | 116 | 199 | |

Shoay Gyeen,
The 1st April 1868.

G. J. COOPER,
*In Civil Medical Charge.*

**REPORT on BIRTHS and DEATHS in the Town of AKYAB, for the year ending 31st March 1868.**

The following report embraces a period of 12 months from 1st April 1867 to 31st March 1868, in contradistinction to last year's Return which consisted of 11 months only. The Registration continues to be carefully and regularly attended to, and comprises all Births and Deaths of which it is possible to obtain any account. The statements are obtained from the office of the Deputy Commissioner, and the population is as follows:—

| | |
|---|---|
| Europeans ... ... ... ... | 156 |
| Aracanese ... ... ... ... | 11,400 |
| Burmese ... ... ... ... | 270 |
| Chinese... ... ... ... ... | 61 |
| Bengallees ... ... ... ... | 2,906 |
| Mussulmen ... ... ... ... | 705 |
| Madrassees ... ... ... ... | 29 |
| Other races ... ... ... ... | 9 |
| Total ... | 15,536 |

2. As remarked last year, this population varies greatly, as regards the Bengal coolies, whose average taken during the six months of the working season may be mentioned at 5,000, but in calculating the death rate we must only add 2,500 to the fixed population.

| Population. | No. of births 667 Births to population of 1,000. | Population. | No. of deaths 539 Deaths to population of 1,000. |
|---|---|---|---|
| 15,536 | 42.2 | 15,536 | 34.6 |

3. The following Tabular Statement shows the causes of deaths, that is, so far as they can be ascertained.

| Population. | No. of deaths. | Ratio per 1,000 per annum. | Diseases. | No. of fatal cases. | Ratio per cent of deaths. |
|---|---|---|---|---|---|
| 15.536 | 539 | 34.6 | Still born... ... ... | 12 | 2.2 |
| | | | Fevers ... ... ... | 218 | 40.4 |
| | | | Old age ... ... ... | 19 | 35.2 |
| | | | Tetanus ... ... ... | 70 | 12.9 |
| | | | Ulcers ... ... ... | 36 | 6.6 |
| | | | Parturition ... ... | 13 | 2.2 |
| | | | Wounds ... ... ... | 2 | .3 |
| | | | Cholera ... ... ... | 1 | .1 |
| | | | Lung diseases ... ... | 19 | 3.5 |
| | | | Accidents... ... ... | 6 | 1.1 |
| | | | Dysentery and Diarrhœa | 41 | 7.6 |
| | | | Abdominal diseases ... | 32 | 50.9 |
| | | | Other diseases ... ... | 70 | 12.9 |
| 15.536 | 539 | 34.6 | | 539 | 1. |

4. If we compare the above Return with that of last year, we shall observe "a very marked improvement in the general health of the inhabitants of the Town. Cholera amongst the European population has been unknown; while the Native population shows only *one* by the side of sixty-two fatal cases of last year, and 333 of 1865 and 1866. Amongst the Shipping there has been little or no disease; what did exist was chiefly Diarrhœa, and the usual amount of Syphilis—there has been no Scurvy in any form."

5. The following is the special report required, having reference to Cholera amongst the Natives.

| Population. | Number of cases. | Ratio per cent. |
|---|---|---|
| 15,380 | 1 | ·6501 |

6. Mortalily from Fever, still holds its position, as being more destructive to life than any other disease, still compared with the previous years, there is some improvement; Fever will always prevail more or less, amongst the inhabitants of Akyab in consequence of the almost hopeless condition of some portion of the Town, and the peculiar habits of the people; no persuasion, and no law will effect a change.

7. As regards the European population, there has been no deaths from Fever, or indeed any other disese.

J. M. WHITE,
*Civil Surgeon and Health Officer.*

Town of Akyab,
*The* 1*st April* 1868.

## Form A.

*Annual Return of* BIRTHS *in the Town of* AKYAB, *for the year ending* 31*st March* 1868. *Population* 15,536.

| Births. | Sex. | Races. Burmese | Aracan-ese. | Karens | Shans | Chinese | Natives of India | Other Races. | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | " | 17 | " | " | 2 | 4 | " | 46 | |
| | Females | 1 | 18 | " | " | " | 4 | " | | |
| May " | Males | " | 16 | " | " | " | 5 | " | 35 | |
| | Females | 1 | 9 | " | " | " | 3 | 1 | | |
| June " | Males | 1 | 21 | " | " | " | 6 | " | 49 | |
| | Females | " | 17 | " | " | " | 4 | " | | |
| July " | Males | " | 17 | " | " | " | 6 | 1 | 59 | |
| | Females | 2 | 23 | " | " | " | 10 | " | | |
| August " | Males | " | 18 | " | " | " | 8 | 1 | 56 | |
| | Females | 2 | 17 | " | " | " | 9 | 1 | | |
| September " | Males | " | 24 | " | " | " | 9 | " | 65 | |
| | Females | " | 20 | " | " | " | 11 | 1 | | |
| October " | Males | 18 | " | " | " | " | 9 | " | 51 | |
| | Females | 20 | " | " | " | " | 4 | " | | |
| November " | Males | " | 20 | " | " | " | 7 | 1 | 57 | |
| | Females | " | 21 | " | " | " | 8 | " | | |
| December " | Males | " | 30 | " | " | 1 | 18 | " | 78 | |
| | Females | 1 | 23 | " | " | " | 5 | " | | |
| Jan. 1868 | Males | " | 29 | " | " | 1 | 9 | 2 | 63 | |
| | Females | 1 | 15 | " | " | " | 6 | " | | |
| Feb. " | Males | " | 25 | " | " | " | 4 | " | 57 | |
| | Females | 1 | 18 | " | " | " | 9 | " | | |
| March " | Males | " | 23 | " | " | 1 | 4 | | 51 | |
| | Females | " | 17 | " | " | 1 | 5 | | | |

J. M. WHITE,
*Civil Surgeon.*

STATION OF AKYAB,
The 1st April 1868.

## Form B.

*Registration Return of* DEATHS *in the Town of the* AKYAB *for the year ending* 31*st March*, 1868. *Population* 15,536.

| Months. | Sex. | Burmese | Arakanese | Karens | Shans | Chinese | Natives of India | Other Races | Grand Total | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *Races.* | | | | | | | | |
| April 1867 | Males | " | 4 | " | " | " | 10 | " | 25 | |
| | Females | " | 8 | " | " | " | 3 | " | | |
| May " | Males | " | 17 | " | " | " | 6 | " | 29 | |
| | Females | " | 3 | " | 1 | " | 2 | " | | |
| June " | Males | 2 | 12 | " | " | " | 5 | " | 36 | |
| | Females | " | 12 | " | " | " | 5 | " | | |
| July " | Males | " | 25 | " | " | 1 | 4 | 1 | 53 | |
| | Females | 2 | 15 | " | " | " | 5 | " | | |
| August " | Males | 2 | 16 | " | " | 1 | 10 | " | 17 | |
| | Females | 1 | 18 | " | " | " | 9 | " | | |
| September " | Males | 1 | 21 | " | " | 2 | 14 | 1 | 59 | |
| | Females | 1 | 14 | " | " | " | 5 | " | | |
| October " | Males | " | 7 | " | " | 2 | 7 | " | 35 | |
| | Females | 2 | 11 | " | " | " | 6 | " | | |
| November " | Males | 1 | 16 | " | " | " | 9 | " | 48 | |
| | Females | 1 | 7 | " | " | " | 14 | " | | |
| December " | Males | " | 19 | " | " | 1 | 11 | " | 62 | |
| | Females | 2 | 22 | " | " | " | 7 | " | | |
| January 1868 | Males | " | 29 | " | " | 1 | 9 | 2 | 63 | |
| | Females | 1 | 15 | " | " | " | 6 | " | | |
| February " | Males | " | 14 | " | " | " | 3 | " | 36 | |
| | Females | " | 12 | " | " | " | 7 | " | | |
| March " | Males | " | 17 | " | " | 1 | 6 | " | 26 | |
| | Females | 1 | 9 | " | " | " | 2 | " | | |

STATION OF AKYAB,
The 1st April, 1868.

J. M. WHITE.
*Civil Surgeon,*

## Form C.

*Return showing the supposed and ascertained causes of* DEATH *among the several races in the Town of* AKYAB; *during the year ending* 31*st March* 1868.

| Ages. | Burmese | | | Arakanese | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other races | | | Grand Total. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | |
| Natus Mortus ... | 1 | ... | 1 | 3 | 2 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 4 | 6 | ... | ... | ... | 6 | 6 | 12 | |
| Febris Int. Rem. et Cont. | 2 | 6 | 8 | 75 | 72 | 147 | ... | ... | ... | ... | 1 | 1 | 8 | ... | 8 | 25 | 26 | 51 | 3 | ... | 3 | 113 | 105 | 218 | |
| Senectus ... ... | 3 | 2 | 5 | 6 | 2 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 6 | ... | ... | ... | 9 | 10 | 19 | |
| Trismus et Tetanus Inf. | ... | ... | ... | 19 | 25 | 44 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 22 | 4 | 26 | ... | ... | ... | 41 | 29 | 70 | |
| Ulcus ... ... | ... | ... | ... | 13 | 18 | 31 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 2 | 5 | ... | ... | ... | 16 | 20 | 36 | |
| Partus et ejusd. Seq. | ... | ... | ... | ... | 4 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 9 | 9 | ... | ... | ... | ... | 13 | 13 | |
| Dysenteria et Diarrhœa | ... | 3 | 3 | 19 | 1 | 20 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 13 | 3 | 16 | 1 | ... | 1 | 34 | 7 | 41 | |
| Cholera ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | 1 | |
| Vulnus ... ... | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | |
| Lung diseases ... | ... | ... | ... | 9 | 4 | 13 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 | 6 | ... | ... | ... | 12 | 7 | 19 | |
| Accidents ... ... | ... | ... | ... | 4 | 1 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 4 | 2 | 6 | |
| Other diseases ... | ... | ... | ... | 40 | 11 | 51 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10 | 9 | 19 | ... | ... | ... | 50 | 20 | 70 | |
| Abdominal diseases ... | ... | ... | ... | 7 | 6 | 13 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | 4 | 19 | ... | ... | ... | 22 | 10 | 32 | |
| Total ... | 6 | 11 | 17 | 197 | 146 | 343 | ... | ... | ... | ... | ... | 1 | 9 | ... | 9 | 94 | 71 | 165 | 4 | ... | 4 | 310 | 229 | 539 | |

Station of Akyab,
The 1st April 1868.

J. M. WHITE,
*Civil Surgeon.*

## Form D.

*Return showing the* DEATHS *at various ages among the several races in the Town of* AKYAB, *during the year ending 31st March* 1868.

| Ages. | Burmese. | | | Arucanese | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | |
| Still born ... ... | 1 | " | 1 | 3 | 2 | 5 | " | " | " | " | " | " | " | " | " | 2 | 4 | 6 | " | " | " | 6 | 6 | 12 | |
| Under 1 month ... ... | " | 1 | 1 | 26 | 25 | 51 | " | " | " | " | " | " | " | " | " | 7 | 5 | 12 | 1 | " | 1 | 32 | 33 | 65 | |
| do. 6 months ... ... | " | " | " | 21 | 11 | 32 | " | " | " | " | " | " | " | " | " | 4 | 2 | 6 | " | " | " | 25 | 13 | 38 | |
| do. 1 year ... ... | " | " | " | 5 | 4 | 9 | " | " | " | " | " | " | " | " | " | 2 | " | 2 | " | " | " | 7 | 4 | 11 | |
| 5 to 10 years ... ... | 1 | " | 1 | 23 | 34 | 57 | " | " | " | " | " | " | " | " | " | 14 | 3 | 17 | " | " | " | 38 | 37 | 75 | |
| 10 to 15 " ... ... | " | " | " | 4 | 4 | 8 | " | " | " | " | " | " | 1 | " | 1 | " | 2 | 2 | " | " | " | 5 | 6 | 11 | |
| 15 to 20 " ... ... | " | 1 | 1 | 8 | 2 | 10 | " | " | " | " | " | " | " | " | " | 4 | 5 | 9 | 1 | " | 1 | 13 | 8 | 21 | |
| 20 to 25 " ... ... | " | " | " | 11 | 7 | 18 | " | " | " | " | " | " | 1 | " | 1 | 8 | 8 | 16 | " | " | " | 20 | 15 | 35 | |
| 25 to 30 " ... ... | " | " | " | 15 | 7 | 22 | " | " | " | " | " | " | " | " | " | 8 | 7 | 15 | " | " | " | 25 | 12 | 37 | |
| 30 to 35 " ... ... | " | 2 | 2 | 13 | 3 | 16 | " | " | " | " | " | " | 1 | " | 1 | 14 | 7 | 21 | 1 | " | 1 | 29 | 12 | 41 | |
| 35 to 40 " ... ... | " | " | " | 24 | 9 | 33 | " | " | " | " | " | " | 2 | " | 2 | 10 | 5 | 15 | " | " | " | 36 | 14 | 50 | |
| 40 to 45 " ... ... | " | " | " | 17 | 1 | 18 | " | " | " | " | " | " | 1 | " | 1 | 3 | 3 | 6 | " | " | " | 21 | 4 | 25 | |
| 45 to 50 " ... ... | " | " | " | 2 | 3 | 5 | " | " | " | " | " | " | 1 | " | 1 | 1 | 4 | 5 | " | " | " | 4 | 7 | 11 | |
| 50 to 55 " ... ... | " | " | " | 9 | 3 | 12 | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | 1 | " | 1 | 11 | 4 | 15 | |
| 55 to 60 " ... ... | 1 | " | 1 | 2 | 13 | 15 | " | " | " | " | " | " | 2 | " | 2 | 4 | 2 | 6 | " | " | " | 9 | 15 | 24 | |
| 60 to 65 " ... ... | " | 3 | 3 | 5 | 6 | 11 | " | " | " | " | " | " | " | " | " | 5 | 5 | 10 | " | " | " | 10 | 14 | 24 | |
| 65 to 70 " ... ... | 2 | 2 | 4 | 2 | 5 | 7 | " | " | " | " | " | " | " | " | " | 3 | 3 | 6 | " | " | " | 7 | 10 | 17 | |
| 70 and upwards ... ... | 1 | 2 | 3 | 7 | 7 | 14 | " | " | " | " | 1 | 1 | " | " | " | 4 | 5 | 9 | " | " | " | 12 | 15 | 27 | |
| | | | | | | | | | | | | | | | | | | | | " | | | | | |
| Total ... | 6 | 11 | 17 | 197 | 146 | 343 | " | " | " | " | 1 | 1 | 9 | | 9 | 94 | 71 | 165 | 4 | " | 4 | 310 | 229 | 539 | |

STATION OF AKYAB,
The 1st April 1868.

J. M. WHITE,
*Civil Surgeon.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* AKYAB *for the year ending* 31*st March* 1868, *Population* 16,438 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Arakanese | Kareens | Shans | Chinese | Natives of India | Other races | | |
| April 1867 | Males | ,, | 17 | ,, | ,, | 2 | 4 | ,, | 46 | |
| | Females | 1 | 18 | ,, | ,, | ,, | 4 | ,, | | |
| May ,, | Males | 1 | 16 | ,, | ,, | ,, | 5 | ,, | 35 | |
| | Females | ,, | 9 | ,, | ,, | ,, | 3 | 1 | | |
| June ,, | Males | 1 | 21 | ,, | ,, | ,, | 6 | ,, | 49 | |
| | Females | ,, | 17 | ,, | ,, | ,, | 4 | ,, | | |
| July ,, | Males | ,, | 17 | ,, | ,, | ,, | 6 | 1 | 59 | |
| | Females | 2 | 23 | ,, | ,, | ,, | 10 | ,, | | |
| August ,, | Males | ,, | 18 | ,, | ,, | ,, | 8 | 1 | 56 | |
| | Females | 2 | 17 | ,, | ,, | ,, | 9 | 1 | | |
| Septr. ,, | Males | ,, | 24 | ,, | ,, | ,, | 9 | ,, | 65 | |
| | Females | ,, | 20 | ,, | ,, | ,, | 11 | 1 | | |
| Octr. ,, | Males | ,, | 18 | ,, | ,, | ,, | 9 | ,, | 51 | |
| | Females | ,, | 20 | ,, | ,, | ,, | 4 | ,, | | |
| Novr. ,, | Males | ,, | 20 | ,, | ,, | ,, | 7 | 1 | 57 | |
| | Females | ,, | 21 | ,, | ,, | ,, | 8 | ,, | | |
| Decr. ,, | Males | ,, | 30 | ,, | ,, | 1 | 18 | ,, | 78 | |
| | Females | 1 | 23 | ,, | ,, | ,, | 5 | ,, | | |
| Jan. 1868 | Males | ,, | 29 | ,, | ,, | 1 | 9 | 2 | 63 | |
| | Females | 1 | 15 | ,, | ,, | ,, | 6 | ,, | | |
| Feb. ,, | Males | ,, | 25 | ,, | ,, | ,, | 4 | ,, | 57 | |
| | Females | 1 | 18 | ,, | ,, | ,, | 9 | ,, | | |
| March ,, | Males | ,, | 23 | ,, | ,, | 1 | 4 | ,, | 51 | |
| | Females | ,, | 17 | ,, | ,, | 1 | 5 | ,, | | |

AKYAB,
2nd April 1868.

J. TREASY,
*Magistrate.*

## Form B.

*Registration Return of* DEATHS *in the Town of* AKYAB, *for the year ending* 31*st March* 1868. *Population* 16,438 *Souls.*

| Months. | Sex. | Races. Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races. | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | " | 4 | " | " | " | 10 | " | 25 | |
| | Females | " | 8 | " | " | " | 3 | " | | |
| May " | Males | " | 17 | " | " | " | 6 | " | 29 | |
| | Females | " | 3 | " | 1 | " | 2 | " | | |
| June " | Males | 2 | 12 | " | " | " | 5 | " | 36 | |
| | Females | " | 12 | " | " | " | 5 | " | | |
| July " | Males | 1 | 25 | " | " | 1 | 4 | 1 | 53 | |
| | Females | 1 | 15 | " | " | " | 5 | " | | |
| August " | Males | 2 | 16 | " | " | 1 | 10 | " | 57 | |
| | Females | 1 | 18 | " | " | " | 9 | " | | |
| Septr. " | Males | 1 | 21 | " | " | 2 | 14 | 1 | 59 | |
| | Females | 1 | 14 | " | " | " | 5 | " | | |
| October " | Males | " | 7 | " | " | 2 | 7 | " | 35 | |
| | Females | 2 | 11 | " | " | " | 6 | " | | |
| Novr. " | Males | 1 | 16 | " | " | " | 9 | " | 48 | |
| | Females | 1 | 7 | " | " | " | 14 | " | | |
| Decr. " | Males | " | 19 | " | " | 1 | 11 | " | 62 | |
| | Females | 2 | 22 | " | " | " | 7 | " | | |
| Jany. 1868. | Males | " | 17 | " | " | 1 | 16 | " | 54 | |
| | Females | " | 15 | " | " | " | 5 | " | | |
| Feby. " | Males | " | 14 | " | " | " | 3 | " | 36 | |
| | Females | " | 12 | " | " | " | 7 | " | | |
| March " | Males | " | 17 | " | " | 1 | 6 | " | 36 | |
| | Females | 1 | 9 | " | " | " | 2 | " | | |

AKYAB,
2nd April, 1868.

J. TREASY,
*Magistrate.*

**Form C.** *Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* AKYAB *during the year ending 31st March 1868. Population 16,438 Souls.*

| Nature of Disease. | Burmese | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | Natives | | | Other Races | | | Total. | | | Remark. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | |
| Sill Born | 1 | ... | 1 | 3 | 2 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 4 | 6 | ... | ... | .. | 6 | 6 | 12 | |
| Fevers | 2 | 5 | 7 | 78 | 62 | 140 | ... | ... | ... | ... | 1 | 1 | 8 | ... | 8 | 64 | 28 | 92 | ... | ... | .. | 125 | 96 | 248 | |
| After Child Birth | ... | ... | ... | ... | 9 | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 8 | ... | ... | .. | ... | 17 | 17 | |
| Tetanus | ... | 1 | 1 | 25 | 25 | 50 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 6 | 9 | ... | ... | .. | 28 | 32 | 60 | |
| Sores | ... | ... | ... | 7 | 5 | 12 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 | 1 | ... | 1 | 9 | 7 | 16 | |
| Old age | 3 | 2 | 5 | 15 | 18 | 33 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 5 | 7 | ... | ... | .. | 20 | 25 | 45 | |
| Bowel complant | 1 | ... | 1 | 7 | ... | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2 | 6 | ... | ... | .. | 12 | 2 | 14 | |
| Ulcer | ... | ... | ... | 1 | 3 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | .. | 2 | 3 | 5 | |
| Suffocation | ... | ... | ... | 1 | 3 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 | ... | ... | .. | 2 | 5 | 7 | |
| Diarrhœa | ... | 1 | 1 | 17 | 4 | 21 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 3 | 7 | ... | ... | .. | 21 | 8 | 29 | |
| Dropsy | ... | ... | ... | 4 | 2 | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 5 | 8 | 1 | ... | 1 | 8 | 7 | 15 | |
| Asthma | ... | ... | ... | 6 | ... | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | ... | ... | .. | 8 | .. | 8 | |
| Dysentry | ... | ... | ... | 5 | 2 | 7 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 10 | ... | 10 | ... | ... | .. | 16 | .. | 16 | |
| Rush of blood | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | 1 | 1 | |
| Wound | ... | ... | ... | 4 | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 4 | .. | 4 | |
| Drowned | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | .. | .. | 2 | 2 | |
| Vomiting blood | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 2 | .. | 2 | |
| Cough | ... | ... | ... | 4 | 4 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 3 | 4 | ... | ... | .. | 5 | 7 | 12 | |
| Accident | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 1 | .. | 1 | |
| Miscarriage | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | .. | .. | 1 | 1 | |
| Boils | ... | ... | ... | 4 | 5 | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 | ... | ... | .. | 5 | 7 | 12 | |
| Hanged | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 1 | .. | 1 | |
| Grand Total | 7 | 9 | 16 | 146 | 185 | 331 | ... | ... | ... | ... | 1 | 1 | 9 | ... | 9 | 99 | 72 | 171 | 2 | ... | 2 | 302 | 228 | 530 | |

Akyab, 2nd April, 1868.

J. TREASY, *Magistrate.*

## Form D.

*Return shewing the* DEATHS *at various ages among the several races in the Town of* AKYAB, *during the year ending 31st March* 1868.—*Population* 16,438 *Souls.*

| Ages. | Burmese. | | | Arakanese. | | | Karens, | | | Shans. | | | Chinese. | | | Native of India. | | | Other races. | | | Grand Total. | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females | Total. | Males. | Females. | Total. | |
| Still born ... | 1 | " | 1 | 3 | 2 | 5 | " | " | " | " | " | " | " | " | " | 2 | 4 | 6 | " | " | " | 6 | 6 | 12 | |
| Under 1 month ... | 1 | " | 1 | 26 | 26 | 52 | " | " | " | " | " | " | " | " | " | 5 | 6 | 11 | 1 | " | 1 | 33 | 32 | 65 | |
| " 6 " ... | " | " | " | 16 | 11 | 27 | " | " | " | " | " | " | " | " | " | 4 | 2 | 6 | " | " | " | 20 | 13 | 33 | |
| " 1 year ... | " | " | " | 5 | 4 | 9 | " | " | " | " | " | " | " | " | " | " | 4 | 4 | " | " | " | 5 | 8 | 13 | |
| From 1 to 5 years ... | 1 | " | 1 | 17 | 20 | 37 | " | " | " | " | " | " | " | " | " | 11 | 3 | 14 | " | " | " | 29 | 23 | 52 | |
| 5 to 10 " ... | " | " | " | 11 | 14 | 25 | " | " | " | " | " | " | 1 | " | 1 | 1 | 2 | 3 | " | " | " | 13 | 16 | 29 | |
| 10 to 15 " ... | " | " | " | 4 | 4 | 8 | " | " | " | " | " | " | " | " | " | 1 | 3 | 4 | " | " | " | 5 | 7 | 12 | |
| 15 to 20 " ... | " | 1 | 1 | 6 | 3 | 9 | " | " | " | " | " | " | " | " | " | 6 | 5 | 11 | " | " | " | 12 | 9 | 21 | |
| 20 to 25 " ... | " | " | " | 5 | 6 | 11 | " | " | " | " | " | " | 1 | " | 1 | 6 | 7 | 13 | " | " | " | 12 | 13 | 25 | |
| 25 to 30 " ... | " | " | " | 8 | 8 | 16 | " | " | " | " | " | " | " | " | " | 12 | 6 | 18 | " | " | " | 20 | 14 | 34 | |
| 30 to 35 " ... | " | 1 | 1 | 13 | 3 | 16 | " | " | " | " | " | " | 1 | " | 1 | 13 | 9 | 22 | " | " | " | 27 | 13 | 40 | |
| 35 to 40 " ... | " | " | " | 16 | 3 | 19 | " | " | " | " | " | " | 1 | " | 1 | 11 | 5 | 16 | 1 | " | 1 | 29 | 8 | 37 | |
| 40 to 45 " ... | " | 1 | 1 | 12 | 6 | 18 | " | " | " | " | " | " | 1 | " | 1 | 2 | 2 | 4 | " | " | " | 15 | 9 | 24 | |
| 45 to 50 " ... | " | " | " | 4 | 2 | 6 | " | " | " | " | " | " | 2 | " | 2 | 10 | 2 | 12 | " | " | " | 16 | 4 | 20 | |
| 50 to 55 " ... | " | " | " | 2 | 4 | 6 | " | " | " | " | " | " | " | " | " | 3 | 2 | 5 | " | " | " | 5 | 6 | 11 | |
| 55 to 60 " ... | 1 | " | 1 | 4 | 2 | 6 | " | " | " | " | " | " | 2 | " | 2 | 3 | 2 | 5 | " | " | " | 10 | 4 | 14 | |
| 60 to 65 " ... | " | 3 | 3 | 7 | 8 | 15 | " | " | " | " | " | " | " | " | " | 2 | 3 | 5 | " | " | " | 3 | 14 | 23 | |
| 65 to 70 " ... | " | " | " | 10 | 4 | 14 | " | " | " | " | " | " | " | " | " | 3 | 2 | 5 | " | " | " | 13 | 6 | 19 | |
| 70 upwards ... | 3 | 3 | 6 | 16 | 16 | 32 | " | " | " | " | 1 | 1 | " | " | " | 4 | 3 | 7 | " | " | " | 23 | 23 | 46 | |
| Total ... | 7 | 9 | 16 | 185 | 146 | 331 | " | " | " | " | 1 | 1 | 9 | " | 9 | 99 | 72 | 171 | 2 | " | 2 | 302 | 228 | 530 | |

Akyab,
The 2nd April 1868.

J. TREASY,
*Magistrate.*

## No. 6.

FROM

CAPTAIN W. C. PLANT,
*Deputy Commissioner, Ramree.*

To

LIEUTENANT COLONEL STEVENSON,
*Commissioner of Arakan.*

**Kyouk Phyoo, the 4th April 1868.**

SIR,

I have the honor to forward the statistical returns of Births and Deaths for the Town of Kyouk Phyoo, during 1867-68.

2. In the year under review there has been an increase of population, an increase in number of Births, and a decrease in number of Deaths, as compared with the previous year, viz:—

| | *Population.* | *Births.* | *Deaths.* |
|---|---|---|---|
| 1866–67 | 3,160 | 46 | 116 |
| 1867–68 | 3,590 | 93 | 82 |
| Increase | 430 | 87 | Decrease 34 |

and showing the ratio of births to population to be nearly 26 per 1,000 against 17 per 1,000 in 1866-67, and the ratio of deaths to population to be nearly 23 per 1,000 against 34 per 1,000 in 1866-67, which as the population has increased in 1867-68 indicates that the health of the town of Kyouk Phyoo has, vastly, improved during the past year.

3. In the births there is only the slight difference of 3, between Male and Female, there being 48 of the former born against 45 of the latter and out of the total number of births (93) 27 or nearly ⅓ are children of natives of India.

The largest number of births took place in April and May being 11 and 14 respectively, and this extraordinary

feature, I have noticed in different parts of British Burma and the cause I think is the greater number of marriages immediately after the assessment and collection for Capitation Tax in July and August of each year, and I am inclined to think that if the assessment and collection of Capitation Tax were changed to an earlier or later date, this feature in the births would follow route, as it is only natural, that a poorish man would postpone his marriage till after he had paid his bachelor rate of the Tax.

4. Turning to the deaths there are 6 deaths of babes under one month, out of the total of 93 births, this tells a sad tale, viz: that nearly 6½ per cent. of infants born die before they are a month old. The greatest death rate is amongst children from 5 to 10 years old, no less than 31 out of the total number of deaths 82, or nearly 38 per cent. die at that age, and of these 31, no less than 22, are males.

The supposed and ascertained causes of the 82 deaths are given in detail in statement C. in which fever predominates to a fearful extent. In conclusion I would recommend that the present plan of collecting the information necessary for these very important returns be abandoned and that a registry clerk be appointed at say 12 Rs. per month, like at other stations, for the purpose, instead of the Razawat Goung, as at present, who have many other duties to perform and I would also recommend that the registration of births and deaths be also made in the Town of Ramree, a clerk being appointed for the purpose on 15 Rs. per month being a much larger town than Kyouk Phyoo.

I have the honor to be,
Sir,
Your most obedient servant,

W. C. PLANT, CAPT.
*Deputy Commissioner, Ramree.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* KYOUK-PHYOO, *for the year* 1867-68.—*Posulations* 3,590.

| Months. | Sex. | Races. Burmese | Arakanese. | Karens | Shans | Chinese | Natives of India. | Other Races. | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males ... | ..... | 1 | ..... | ..... | ..... | 4 | ..... | 11 | |
| | Females ... | ..... | 3 | ..... | ..... | ..... | 3 | ..... | | |
| May " | Males ... | ..... | 7 | ..... | ..... | ..... | 1 | ..... | 14 | |
| | Females ... | ..... | 5 | ..... | ..... | ..... | 1 | ..... | | |
| June " | Males ... | ..... | 1 | ..... | ..... | ..... | 1 | ..... | 4 | |
| | Females ... | ..... | 2 | ..... | ..... | ..... | ..... | ..... | | |
| July " | Males ... | ..... | 3 | ..... | ..... | ..... | 2 | ..... | 8 | |
| | Females ... | ..... | 1 | ..... | ..... | ..... | 2 | ..... | | |
| August " | Males ... | 1 | 3 | ..... | ..... | ..... | 2 | ..... | 9 | |
| | Females ... | ..... | 2 | ..... | ..... | ..... | 1 | ..... | | |
| Sept. " | Males ... | ..... | 3 | ..... | ..... | ..... | ..... | ..... | 7 | |
| | Females ... | ..... | 2 | ..... | ..... | ..... | 1 | 1 | | |
| October " | Males ... | ..... | 3 | ..... | ..... | ..... | ..... | ..... | 10 | |
| | Females ... | ..... | 5 | ..... | ..... | ..... | 1 | 1 | | |
| Nov. " | Males ... | ..... | 1 | ..... | ..... | ..... | ..... | ..... | 4 | |
| | Females ... | 2 | ..... | ..... | ..... | ..... | 1 | ..... | | |
| Decr. " | Males ... | ..... | 2 | ..... | ..... | ..... | 1 | ..... | 7 | |
| | Females ... | 2 | 2 | ..... | ..... | ..... | ..... | ..... | | |
| Jan. 1868 | Males ... | 2 | 1 | ..... | ..... | ..... | 1 | ..... | 6 | |
| | Females ... | 1 | 1 | ..... | ..... | ..... | ..... | ..... | | |
| Feb. " | Males ... | ..... | 4 | ..... | ..... | ..... | 1 | ..... | 8 | |
| | Females ... | ..... | 2 | ..... | ..... | ..... | 1 | ..... | | |
| March " | Males ... | ..... | 2 | ..... | ..... | ..... | 1 | ..... | 5 | |
| | Females ... | ..... | ..... | ..... | ..... | ..... | 2 | ..... | | |

Dy. Commr's Office.
Ramree, 4*th April* 1868.

W. C. PLANT.
*Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in Town of* KYOUK-PHYOO *for the year* 1867-68. *Population* 3,590.

| Months. | Sex. | Races. Burmese | Arakanese | Karens | Shans | Chinese | Natives of India. | Other Races | Grand Total | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867 | Males | " | " | " | " | " | 3 | " | 8 | |
| | Females | " | 3 | " | " | " | 2 | " | | |
| May " | Males | " | 3 | " | " | " | 1 | " | 6 | |
| | Females | " | 2 | " | " | " | " | " | | |
| June " | Males | " | 2 | " | " | " | 2 | " | 6 | |
| | Females | " | 2 | " | " | " | " | " | | |
| July " | Males | " | 4 | " | " | " | " | " | 7 | |
| | Females | " | 2 | " | " | " | 1 | " | | |
| August " | Males | " | 7 | " | " | " | 1 | " | 10 | |
| | Females | 1 | 1 | " | " | " | " | " | | |
| September " | Males | " | 1 | " | " | " | 1 | " | 6 | |
| | Females | 1 | 3 | " | " | " | " | " | | |
| October " | Males | " | 4 | " | " | " | 2 | " | 8 | |
| | Females | " | 1 | " | " | " | " | 1 | | |
| November " | Males | " | 2 | " | " | " | " | " | 4 | |
| | Females | " | 2 | " | " | " | " | " | | |
| December " | Males | 2 | 4 | " | " | " | 3 | " | 11 | |
| | Females | 1 | 1 | " | " | " | " | " | | |
| January 1868 | Males | 1 | 3 | " | " | " | " | " | 8 | |
| | Females | " | 2 | " | " | " | 2 | " | | |
| February " | Males | " | 2 | " | " | " | 1 | " | 3 | |
| | Females | " | " | " | " | " | " | " | | |
| March " | Males | 1 | 1 | " | " | " | 1 | " | 5 | |
| | Females | 1 | " | " | " | " | 1 | " | | |

Dy. Commr's. Office,
Ramree 4th April 1868.

W. C. PLANT.
*Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several races in the Town of* KYOUK-PHYOO, *during the year* 1867-68.—*Population* 3,590.

| Ages. | Burmese | | | Arakanese | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other races | | | Grand Total. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | |
| Asthma ... ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | |
| After birth ... ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 2 | 2 | |
| Abscess ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | 1 | |
| Bowel Complaint ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | |
| Child birth ... ... | ... | 1 | 1 | ... | 3 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 5 | 5 | |
| Cough ... ... | 2 | ... | 2 | 3 | 1 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 5 | 2 | 7 | |
| Dropsy ... ... | ... | ... | ... | 5 | 2 | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 2 | 7 | |
| Fever ... ... | 2 | 3 | 5 | 24 | 11 | 35 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | 2 | 17 | ... | 1 | 1 | 41 | 17 | 58 | |
| Total ... | 4 | 4 | 8 | 34 | 18 | 52 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | 6 | 21 | ... | 1 | 1 | 53 | 29 | 82 | |

Dy. Commr's. Office,
Ramree 4th April 1868.

W. C. PLANT,
*Deputy Commissioner.*

# Form D.

*Return showing the* DEATHS *at various ages among the several races in the Town of* KYOUK-PHYOO, *British Burma during the year* 1867-68.

| Ages. | Burmese. | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Grand Total. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Still born ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| Under 1 month ... ... | " | " | " | 3 | 1 | 4 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | 1 | 1 | 3 | 3 | 6 | |
| " 6 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| " 1 year ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 5 to 10 years ... ... | " | 2 | 2 | 15 | 6 | 21 | " | " | " | " | " | " | " | " | " | 7 | 1 | 8 | " | " | " | 22 | 9 | 31 | |
| 10 to 15 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 15 to 20 " ... ... | 2 | 1 | 3 | 3 | 4 | 7 | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | " | " | " | 6 | 6 | 12 | |
| 20 to 25 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 25 to 30 " ... ... | 1 | 1 | 2 | 5 | 2 | 7 | " | " | " | " | " | " | " | " | " | 5 | 1 | 6 | " | " | " | 11 | 4 | 15 | |
| 30 to 35 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 35 to 40 " ... ... | 1 | " | 1 | 4 | 2 | 6 | " | " | " | " | " | " | " | " | " | 1 | 1 | 2 | " | " | " | 6 | 3 | 9 | |
| 40 to 45 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 45 to 50 " ... ... | " | " | " | " | 1 | 1 | " | " | " | " | " | " | " | " | " | 1 | " | 1 | " | " | " | 1 | 1 | 2 | |
| 50 to 55 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 55 to 60 " ... ... | " | " | " | 2 | 2 | 4 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | 2 | 2 | 4 | |
| 60 to 65 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| 65 to 70 " ... ... | " | " | " | 2 | " | 2 | " | " | " | " | " | " | " | " | " | " | 1 | 1 | " | " | " | 2 | 1 | 3 | |
| 70 to 75 " ... ... | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| Total ... | 4 | 4 | 8 | 34 | 18 | 52 | " | " | " | " | " | " | " | " | " | 15 | 6 | 21 | " | 1 | 1 | 53 | 29 | 82 | |

Dy. Commr's. Office,
Rambee 4th April 1868.

*W. C. PLANT,
*Deputy Commissioner.*

**REPORT on BIRTHS and DEATHS in the Town and Suburbs of SANDOWAY, for the year ending 31st March 1868.**

The Population of the Town and Suburbs as estimated at the beginning of the year stood thus :—

| | | |
|---|---|---|
| ADULT. | Males | 646 |
| | Females | 623 |
| CHILDREN. | Males | 451 |
| | Females | 443 |
| | Total | 2,163 |

2. The Population has somewhat decreased during the last two years owing to emigration to Bassein and other Districts.

3. The proportion of sexes is unequal, the males being in excess of females.

4. The Births registered during the year are 108 and Deaths 58, in the ratio of 49.93 and 22.19 per thousand of the population. The births are rather above the average—the deaths about the average.

5. The highest number of births registered was in the month of January—the lowest in June. The highest number of births of male children was registered in July and that of female children in January. The number of male children born during the year is 50, and that of female children 58. The females born being in excess of males.

6. The highest number of deaths occurred between the ages of 1 and 5 years, the next highest under 6 months. The number of deaths of females is greater than that of males being 30 to 28.

7. The classification of races shows that

26 Burmese children
53 Aracanese children
12 Children of Aracanese Mussulman and
17 Children of Natives of India

of both sexes were born during the year, and that

27 Burmese
25 Aracanese
4 Aracanese Mussulman and
2 Natives of India

of different ages and both sexes died during the year.

8. The causes of deaths as registered are Fevers of which 38 died, of Dropsy 7, of Dysentery. 5, of Hooping Cough 2, of Ulcer 2, of Consumption 1, Old Age 1, Killed by Tiger 1, Cause unknown 1. The given causes of death are seldom the correct ones, particularly amongst infantile deaths and therefore not reliable.

9. Out of the 58 deaths registered 33 occurred amongst children, 14 died between the ages of 9 days and 1 year, 13 between 1 and 5 years, 6 between 5 and 10 years. Out of the 33 deaths, 27 are said to have been caused by fever, 2 by Dropsy, 2 by Cough, 1 by Dysentery and 1 Cause unknown. The majority of those deaths said to have been caused by fever must have occurred during dentition, or caused by derangement of the stomach and bowels. Dropsy is uncommon amongst children as an idiopathic disease. The one death, the cause of which is said to be unknown, occurred in an infant nine days old, and I presume it was caused by Trismus Noscentium or nine-day fits.

C. E. PYSTER,
*Civil Medical Officer.*

## Form A.

*Registration Return of* BIRTHS *in the Town of* SANDOWAY *for the year ending* 31*st March* 1868, *Population* 2,163 *Souls.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese | Arakanese | Karens | Shans | Chinese | Natives of India | Other Races | | |
| April 1867 | Males | 1 | 2 | ,, | ,, | ,, | 1 | 1 | 10 | |
| | Females | 3 | 1 | ,, | ,, | ,, | 1 | ,, | | |
| May ,, | Males | 3 | 1 | ,, | ,, | ,, | ,, | ,, | 9 | |
| | Females | 2 | ,, | ,, | ,, | ,, | 1 | 2 | | |
| June ,, | Males | ,, | 2 | ,, | ,, | ,, | ,, | ,, | 4 | |
| | Females | ,, | 2 | ,, | ,, | ,, | ,, | ,, | | |
| July ,, | Males | 4 | 2 | ,, | ,, | ,, | 2 | 1 | 14 | |
| | Females | 1 | 2 | ,, | ,, | ,, | ,, | 2 | | |
| August ,, | Males | ,, | 3 | ,, | ,, | ,, | ,, | ,, | 9 | |
| | Females | ,, | 5 | ,, | ,, | ,, | 1 | ,, | | |
| Septr. ,, | Males | ,, | 3 | ,, | ,, | ,, | 1 | ,, | 7 | |
| | Females | 1 | 2 | ,, | ,, | ,, | ,, | ,, | | |
| Octr. ,, | Males | ,, | ,, | ,, | ,, | ,, | 2 | ,, | 6 | |
| | Females | 1 | 1 | ,, | ,, | ,, | 2 | ,, | | |
| Novr. ,, | Males | ,, | ,, | ,, | ,, | ,, | ,, | 1 | 6 | |
| | Females | 1 | 2 | ,, | ,, | ,, | 2 | ,, | | |
| Decr. ,, | Males | ,, | 2 | ,, | ,, | ,, | ,, | 1 | 5 | |
| | Females | ,, | 2 | ,, | ,, | ,, | ,, | ,, | | |
| Jan. 1868 | Males | 3 | 2 | ,, | ,, | ,, | 1 | ,, | 15 | |
| | Females | ,, | 5 | ,, | ,, | ,, | 2 | 2 | | |
| Feb. ,, | Males | ,, | 2 | ,, | ,, | ,, | 1 | ,, | 11 | |
| | Females | 3 | 4 | ,, | ,, | ,, | ,, | 1 | | |
| March ,, | Males | 2 | 6 | ,, | ,, | ,, | ,, | ,, | 12 | |
| | Females | 1 | 2 | ,, | ,, | ,, | ,, | 1 | | |

SANDOWAY,
Dy. Commr's. Office,
4th April 1868.

W. W. PEMBERTON,
*Deputy Commissioner.*

## Form B.

*Registration Return of* DEATHS *in the Town of* SANDOWAY, *for the year ending* 31*st March* 1868. *Population* 2,163 *Souls.*

| MONTHS. | SEX. | *Races.* Burmese | Aracan-ese | Karens | Shans | Chinese | Natives of India. | Other Races. | Total Males and Females | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| April 1867. | Males | ,, | ,, | ,, | ,, | ,, | ,, | ,, | ,, | |
| | Females | ,, | ,, | ,, | ,, | ,, | ,, | ,, | | |
| May ,, | Males | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 3 | |
| | Females | 1 | 2 | ,, | ,, | ,, | ,, | ,, | | |
| June ,, | Males | ,, | 1 | ,, | ,, | ,, | ,, | ,, | 1 | |
| | Females | ,, | ,, | ,, | ,, | ,, | ,, | ,, | | |
| July ,, | Males | 3 | 1 | ,, | ,, | ,, | 1 | 1 | 8 | |
| | Females | 2 | ,, | ,, | ,, | ,, | ,, | ,, | | |
| August ,, | Males | 3 | 2 | ,, | ,, | ,, | ,, | ,, | 8 | |
| | Females | 1 | 2 | ,, | ,, | ,, | ,, | ,, | | |
| Septr. ,, | Males | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | |
| | Females | 1 | 1 | ,, | ,, | ,, | ,, | ,, | | |
| October ,, | Males | 1 | ,, | ,, | ,, | ,, | ,, | ,, | 3 | |
| | Females | ,, | 2 | ,, | ,, | ,, | ,, | ,, | | |
| Novr. ,, | Males | ,, | ,, | ,, | ,, | ,, | ,, | ,, | 2 | |
| | Females | 2 | ,, | ,, | ,, | ,, | ,, | ,, | | |
| Decr. ,, | Males | 1 | 3 | ,, | ,, | ,, | ,, | ,, | 10 | |
| | Females | 3 | 3 | ,, | ,, | ,, | ,, | ,, | | |
| Jany. 1868. | Males | 1 | 2 | ,, | ,, | ,, | ,, | 1 | 7 | |
| | Females | ,, | 2 | ,, | ,, | ,, | 1 | ,, | | |
| Feby. ,, | Males | 3 | 1 | ,, | ,, | ,, | ,, | 1 | 9 | |
| | Females | 4 | ,, | ,, | ,, | ,, | ,, | ,, | | |
| March ,, | Males | ,, | 1 | ,, | ,, | ,, | ,, | ,, | 4 | |
| | Females | ,, | 2 | ,, | ,, | ,, | ,, | 1 | | |

Dy. Commr's. Office,
Sandoway, 4th April 1868.

W. W. PEMBERTON,
*Deputy Commissioner.*

## Form C.

*Return showing the supposed and ascertained causes of* DEATHS *among the several Races in the Town of* SANDOWAY, *during the year ending* 31*st March* 1868.

| Nature of Disease. | Burmese | | | Aracanese | | | Karens | | | Shans | | | Chinese | | | Natives of India | | | Other Races | | | Total. | | | Remark. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | Males | Females | Total. | |
| Consumption ..... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | |
| Ulcer ..... | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | |
| Dysentery ..... | 1 | 1 | 2 | ... | 2 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 2 | 3 | 5 | |
| Fever ..... | 7 | 10 | 17 | 10 | 8 | 18 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | ... | 1 | 1 | 18 | 20 | 38 | |
| Swellings ..... | 3 | 1 | 4 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 5 | 2 | 7 | |
| Old age ..... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | |
| Killed by Tiger ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | |
| Not known ..... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | |
| Cough ..... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 1 | 1 | 2 | |
| Total..... | 13 | 14 | 27 | 11 | 14 | 25 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | 3 | 1 | 4 | 28 | 30 | 58 | |

Dy. Commr's. Office,
Sandoway, 4th April 1868.

W. W. PEMBERTON,
*Deputy Commissioner.*

# ERRATA.

| | | | | |
|---|---|---|---|---|
| Page | 4 | Para. | 10 | *for* " 1869" *read* " 1867" |
| " | 9 | " | 28 | *for* " Farai" *read* " Tarai" |
| " | 14 | " | 35 | *for* " Sepulchre" *read* " Sepulture" |
| " | 15 | " | 37 | *for* " itself, under" *read* " itself and under" |
| " | 16 | " | 38 | *for* " somewhere," *read* " somewhere." |
| " | 16 | " | 38 | *for* " in" *read* " In" |
| " | 16 | " | 38 | *for* " weather." *read* " weather," |
| " | 16 | " | 38 | *for* " The" *read* " the" |
| " | 21 | " | 49 | *for* " last watershed" *read* " East watershed" |
| " | 24 | " | 54 | *for* " desires" *read* " deserves" |
| " | 26 | " | 61 | *for* " He may" *read* " We may" |
| " | 29 | " | 67 | *for* " Aappendix" *read* " Appendix" |
| " | 41 | " | 16 | after Shwe-Gyeen *read* " are too low" |
| " | 46 | " | 24 | *for* " removed" *read* " renewed" |
| " | 50 | " | 29 | *for* " comtemplation" *read* " contemplation" |
| " | 50 | " | 30 | *for* " 7.0 per cent." *read* " 6.0 per cent." |
| " | 54 | " | 37 | *for* " this" *read* " This" |
| " | 108 | " | 9-*b* | *for* " become" *read* " became" |
| " | 109 | " | 12 | *for* " If" *read* " It" |
| " | 109 | " | 12 | *for* " tank" *read* " tanks or" |
| " | 111 | " | 25-*m* | *for* " I say" *read* " I saw" |
| " | 120 | " | 23 | *for* " can precisely be" *read* " can be precisely" |
| " | 122 | " | 32 | *for* " discovering" *read* " discerning" |
| " | 134 | " | 13 | *for* " towns." *read* " towns," |
| " | 134 | " | 13 | *for* " The" *read* " the" |

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# MEMORANDUM

BY

MAJOR GENERAL A. FYTCHE, C. S. I. CHIEF COMMISSIONER AND AGENT TO THE GOVERNOR GENERAL,

ON THE

REPORT ON

# PUBLIC HEALTH AND VITAL STATISTICS

IN

## BRITISH BURMA,

## FOR 1868.

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This is the second report by the Sanitary Commissioner on Public Health and Vital Statistics in British Burma. The first report, owing to the appointment of Sanitary Commissioner having been only recently made, was framed entirely on the reports of the several Civil Surgeons and district officers, but the report now to be reviewed was written after personal observation and careful enquiry, and the Chief Commissioner has much pleasure in acknowledging the earnestness and attention displayed by Dr. Cowie in the important work entrusted to him. It is satisfactory to find that the year 1868 has been healthy and unmarked by any general or serious sickness, and more especially is there subject for congratulation in the fact of the two principal towns, Rangoon and Maulmain, continuing to show so fair a health rate. The large towns being usually the *foci* from which contagious diseases are disseminated over the country, it is difficult to estimate the benefit that has accrued from the absence of epidemics not only to the towns themselves but to the Province at large, but it is manifest as regards Rangoon what works carried out in accordance with the laws of sanitation will do, and how desirable it is that they should be continued, Government however can but give the outline, the real details of sanitary reform must be worked out by the people themselves.

## ARAKAN DIVISION

### AKYAB.

2. In consequence of the departure on Sick Certificate of the Officer who was in Medical charge during the year without furnishing the annual sanitary report, information regarding the health and sanitary state of the Town is wanting in completeness. The public health is reported on the whole to have been good, but it is difficult to reconcile this statement with a death rate of 34·7 per 1000 of population. Fever and bowel complaints formed more than one half of the total mortality. The attention of the local authorities has recently been drawn to the defective state of the drainage and water supply, to which much of the sickness in this town may be attributed. The birth rate is shewn as 45·7 *per mille* which if correct is very satisfactory.

### RAMREE.

3. The account of the health and sanitary state of the town is creditable to Captain Plant. The Magistrate will be desired to see to the improvements suggested in para. 21 if possible. The remarks of the Sanitary Commissioner on the possible connection or affinity between the germs of murrain, cholera, and small pox are worthy of attention, and the Chief Commissioner will be glad to receive further information bearing on this subject. The death rate is given as 27·9 per 1000, and the birth rate as 24·3, the latter if correct shews a very unsatisfactory state of things.

### SANDOWAY.

4. The improvement in the condition of the town is satisfactory. The town is a small one with a population of only 1516 souls, and the receipts from Municipal sources are not sufficient for the entertainment of a regular Conservancy Establishment. The course pursued by the Magistrate for preserving order and cleanliness in the streets under the provisions of Section 34 Act V of 1861, is correct. The health of the inhabitants is reported to have been good, the death rate being 27·6 per 1000, and the birth rate 48·8. Arracanese and Natives of India appear to be more liable to sickness than Burmese and more especially with regard to fever, the casualties from this cause among the two former being considerably above the average, while the latter have comparatively escaped.

PEGU DIVISION

## RANGOON.

5. With the exception of the suburbs where a form of remittent fever has for some time past been endemic, the health of Rangoon during the past year has as usual been very good, the death rates including the casualties from fever as above being only 25·4 per 1000. Excluding the suburbs, Rangoon would compare well with many healthy towns in England.

That much of this is due to the sanitary improvements that have been carried out, such as widening the streets, raising the blocks &c., cannot be doubted, but as the Sanitary Commissioner forcibly points out what has been done is but the thin wedge of what is required to ensure the future sanitary condition of the town, the rapidity with which it has increased in size and population has made it impossible to find funds wherewith to keep pace with its sanitary requirements. Like other large towns in India its chief and urgent want is a regular system of sewage and the Chief Commissioner would gladly see some such plan carried out as that proposed by the Sanitary Commissioner viz., a system of covered drainage and flushing apparatus by which the fluid and solid excreta shall be carried away in one process, but then comes the vital question of expense, the cost of such a system of works would be immense, the Municipal funds could not afford it, and assistance from Imperial revenue cannot be expected. Except by imposing fresh Municipal taxes it is by no means clear how the necessary capital for entering upon such a scheme is to be raised. The Chief Commissioner is quite disposed to concur with the Sanitary Commissioner in his assumption, that if the present system is allowed to continue, the future health of the town will be seriously endangered, and he will be glad to receive any suggestion by which the evil can for the present be combated, by some healthy and economical arrangement within the scope of the Municipal funds.

The scheme for forming the Royal Lake into a reservoir for supplying the town with potable water has been commenced, and the preliminary works to improve and increase the capacity of the Lakes is being proceeded with.

A committee was assembled to report on the necessity for supplying the Town with more wells, but on consideration they were of opinion that the number now existing would be

quite sufficient if deepened to meet the requirements of the town until the works for bringing water from the lakes are complete. Their recommendation will be carried out and the attention of the Magistrate drawn to the wells that require filling in.

It is satisfactory to find that in those quarters of the town where the Blocks have been raised and drained, the fever that used to be endemic has gradually disappeared. As funds become available these improvements will be proceeded with, and it is hoped that in time the disease will thus be altogether stamped out.

A slaughter house on the Thayetmyo plan has been sanctioned and will be shortly constructed.

Enquiries should be made into the reasons why the Government Public latrines are not more resorted to, and endeavours made to remove any objections that may exist to their general use.

10,000 Rupees have been sanctioned by Government for the construction of a Lock-Hospital and plan and Estimate is now being prepared by the Public Works Department.

BASSEIN.

6. The sanitary condition and cleanliness of the Town is gratifying, and acknowledgments are due to Dr. Nisbet, the Health Officer for his exertions. The attentive consideration of the Magistrate will be directed to the remarks of the Sanitary Commissioner in paras. 54 and 57 of his report.

The Chief Commissioner concurs with Dr. Cowie, in thinking that the census taken in October must have been defective. A birth and death rate respectively of 50 and 30 *per mille* appears too high to be correct.

MYANOUNG.

7. No epidemic prevailed during the year and the health of the station appears to have been good. The birth rate is given as 40.1 *per mille* and the death rate 25.7. These figures if correct are satisfactory.

The Sanitary Commissioner in the 30th para. of his separate report on this station complains of over-crowding, but this is not borne out by the Medical Officer in charge whose figures give 117.42 square feet to each individual. The new bazaar has been completed and Municipal latrines should be at once erected as proposed, if the state of the Municipal Funds will admit of the expenditure.

### Henzadah.

8. It is in contemplation to remove the Head Quarters of the Myanoung District to Henzadah when much that has been hitherto neglected owing to the absence of resident European supervision will be rectified. Drainage and sanitation will then receive that attention in this Town which they at present evidently much require.

The health of the people has been good, the birth rate being 37 and the death rate 20, both of which figures are very favorable.

### Prome.

9. This station has been visited during the year by small pox, measles, and cholera, the two former being in epidemic form. The total number of deaths from these three causes amounted to 200, of which measles caused more than one half. The out-break of cholera was more sporadic than epidemic in character and was principally prevalent in the months of September and December. The absence of correct registration makes it difficult to ascertain to what extent these diseases prevailed throughout the District, but as far as Native reports can be relied on they do not appear to have obtained a footing except in the larger towns and even there to a very small extent. In Prome itself the mortality during the year has been excessive, the death rate being 48.5 per thousand. Much of this may be attributed to preventible causes, and sanitary works are being pushed on as rapidly as funds will admit. The filling up of the ditch round the Town will it is hoped have a marked effect on the health of the place. Vaccination should also be pushed on with energy, and now that a separate vaccine department has been organized better results may be looked for. The birth rate has been 51.9 *per mille* which is very satisfactory.

### Shwe-doung.

10. Nine miles to the South of Prome is the town of Shwè-doung, with a population of 9,945 souls. Formerly a most unhealthy place, it has by care and attention to sanitary matters become the very reverse, but from its near propinquity to Prome and the constant communication kept up it is very liable to the spread of epidemic and contagious diseases from the more unhealthy town. The birth and death rates which are both too high to be correct point to the necessity for a new census being taken.

THAYETMYO.

11. The sanitary state of the town appears on the whole to have been good. The attention of the Magistrate will be directed to the state of the streets and drains. The birth and death rates are stated to be 42.1 and 31.2 respectively.

TOUNGOO.

12. Cholera in epidemic form appears to have twice broken out during the year, but not to any serious extent, there being altogether 27 deaths from this cause. The suggestions of the Sanitary Commissioner regarding the construction of masonry drains in the main streets should be attended to. A plan for improving the sanitary condition of the fort ditch and elephant sheds has been approved. The remarks of the Sanitary Commissioner on the beneficial influence of trees in towns are recommended to the attention of all District Officers. The general health of the town during the year is reported to have been good, but the statistics furnished of births and deaths cannot be accepted as shewing with any degree of trustworthiness the actual figures for the year.

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TENASSERIM DIVISION.

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MAULMAIN.

13. This station holds the first place among the large towns in British Burma for health and salubrity, and during the year under review it appears to have been remarkably free from diseases of all kinds. The impoverished state of the Municipal Funds has rendered it impossible to keep up a regular Conservancy establishment, but this is no reason why the town should be allowed to remain in the filthy state described by the Sanitary Commissioner. The state of the Bazaars is also not creditable to the Magistrate, who in the absence of a Municipality is directly responsible for proper sanitary arrangements being carried out.

The urgent necessity for increasing the Conservancy staff should be borne in mind whenever Funds may become available. The mortality among all classes of the population during the past year has been remarkably low. So low that if the registration returns are to be credited the rate of mortality 13·3 per 1000 is considerably below the average death rate in Europe, but both the Sanitary Commissioner and Dr. Suffrein are inclined to doubt the correctness of these figures.

### Shwe-Gyeen.

14. The general health of the town and district has been good, but the continued presence of dysentery and fever in the former points to the necessity for careful sanitation. The drainage is reported to have been greatly improved, but much evidently still requires to be done. The liability of the greater part of the Town to be annually flooded during the high rises of the Sittoung and Shwè Gyeen rivers is most likely the chief cause of the prevalence of fever, and whether such can be best prevented by bunding the bank of the river, or as Dr. Cowie suggests by filling up the low land with laterite soil, is still a subject for consideration. The death rate during the year is reported to have been 20.6 per 1000, and the birth rate 15.3, but these figures cannot be accepted as accurate.

### Tavoy.

15. The public health of this town has been good. The attention of the Magistrate will be directed to the remarks of the Sanitary Commissioner in the 4th and 9th paras. of his separate report. The orders of the Chief Commissioner as given in the 37th para. of his Memorandum on last year's report have not been carried out, and the Deputy Commissioner will be desired to explain this omission. The figures given in the registration returns are again too low to be relied on, the death rate being 20.1, and the birth rate 28.9 *per mille.*

### Mergui.

16. Here again the Civil Surgeon's report does not appear to have been reviewed by the Deputy Commissioner. The report is also for the official year, instead of the calendar. Full and complete instructions have been issued for their submission and such mistakes are not creditable to the officers concerned. The general health of the inhabitants is reported to have been good. Cholera appeared in epidemic form in the month of February, but this more properly belongs to the report for 1869. The death rate during the year has been 23.8 per 1000, and the birth rate 37.0. The care taken in the registration of these statistics is creditable to Mr. Shepherd.

### General Remarks.

17. The reports have on the whole been drawn up with care, but the registration returns are still unreliable and appear to have had but little care bestowed on them.

Every endeavour should be made to obtain a correct census of the larger towns, for without this all other statistics are valueless.

It is not only of great practical importance but essential to the successful prosecution of sanitary enquiry that vital statistics should be correctly rendered, and the Chief Commissioner hopes to see more accurate results given in next year's report. District officers also do not appear to have been supplied with correct forms of registration. This should be attended to.

The suggestions of the Sanitary Commissioner for improving the water supply in the several towns, by protecting existing water sources from pollution, opening new wells, deepening others, and removing any likely causes of unhealthiness, are recommended to the earnest attention of the District Officers. The Chief Commissioner hopes to see in next year's report an analysis of the water of some of the wells visited by Dr. Cowie, especially those recommended to be closed.

The introduction of Public Latrines on the plan proposed by the Sanitary Commissioner should be carried out wherever the necessary funds are available.

Dr. Cowie appears to have been mis-informed on the subject of the sale of opium in the Sandoway District as shewn in the 27th para. of his report. It was in order to meet a most extensive demand in a legitimate manner that an opium farm was there established. The restriction put on a large illicit sale by the establishment of an Opium farm with its preventive officers has tended rather to decrease than increase the consumption of the drug in the Sandoway District.

In conclusion the Chief Commissioner desires that in future the several reports of the Sanitary Commissioner may be embodied in the one submitted at the end of the year. Numerous separate reports of different dates make reference difficult and entail unnecessary delay in their examination.

# REPORT

ON

# PUBLIC HEALTH

IN

# BRITISH BURMA,

**For 1868.**

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Hitherto Annual Public Health Reports for British Burma have been furnished for the official year. In April last however, and when most of the annual papers and returns for 1868-69 had reached this office, I received instructions to review the Public Health and Statistics for the calendar year 1868 only. This necessitated the submission of fresh Reports and Returns by all Civil Medical Officers of the Province, and thus the delay which has occurred in framing the present report has been unavoidable.

Change of date cause of delay in submission of report

2. I was appointed Sanitary Commissioner for British Burma in the month of April 1868, and was relieved of my duties as Civil Surgeon of Rangoon on the 1st of May following. From that date to the expiration of the year, embracing eight working months only, in all weathers, I visited both the valleys of the Irrawaddy and Sittoung and part of that of the Salween. I also extended my inspections in a Southerly direction as far as Mergui. The distances travelled amounted in the aggregate to about 2,500 miles. This was partly performed in steamers, whenever available, but chiefly in country boats, on pony back and on foot

Distance travelled and work performed

No delay has taken place in the performance of duty.

3. In addition to the active duties of my office, a large correspondence has been maintained with district officers and various departments; and no delay has taken place in advising the Administration on all Sanitary matters which have from time to time been submitted to me for opinion.

Particular towns and villages visited and reported on

4. During the year, I visited, and inspected a large number of towns and villages. The Sanitary condition of the following towns &c. have been separately reported on.

| | |
|---|---|
| THAYETMYO | PADOUNG |
| PROME | POUNGDAY |
| SHWE-DOUNG | KHODOUK |
| THOMBO | KEY THAY |
| MYAN-OUNG | ZALOON |
| HENZADAH | DONABEW |
| TOUNGOO | SITTOUNG |
| WOOMBAHDOW | KYIEK-THO |
| KIEK-E-THA | KINYOOAH |
| MAULMAIN | TAVOY |
| MERGUI | |

The valleys of Sittoung and Salween &c.

Municipal Taxes collected in towns for Sanitary purposes, &c

5. In the majority of the towns in the foregoing list, Municipal Taxes are collected, with the ostensible purpose of providing funds for their general conservancy and needed Sanitary improvements; and to meet the cost of building and keeping in efficient repair in them, useful public works, such as bazaars, roads, drains, culverts, bridges and wells, &c. That the money so collected is always spent as it should be spent is not for me to say. There are some towns however in which taxes of this nature have been collected for years and which would appear to have benefitted very little by them. My Sanitary Inspection Reports of those towns possessing local funds will be found in the Appendix.

6. The following documents have been consulted in drawing up the Health Report for 1868.

| Division. | Author. | Number and Date. |
|---|---|---|
| ARAKAN. | Capt. Prendergast, Offg. Dy. Commr., Akyab | Forwarding letter, dated 1st August 1868 |
| | Dr. Mountjoy, Civil Surgeon, do | Report without date. |
| | A. Thomas, Esq., in Medl. charge, Kyouk-Phyoo | Annual Health Report, 30th March 1869. Annual Sanitary, 1st April 1869. |
| | J. K. Macrae, Esq., Offg. Dy. Commr. Sandoway | Letter No. 1, 24th April 1869. |
| | C. E Pyster, Esq., in Mdl. charge, Sandoway | Report. 1st June 1869. |
| PEGU. | Capt Strover, Magistrate, Rangoon - - | Remarks, 14th June 1869. |
| | J. J. Heffernan, Esq., Civil Surgeon., Rangoon | Letter No. 310, 19th May 1869. Report, 19th May 1869. |
| | Major McMahon, Depy. Commr., Bassein | Letter No. 17, June 1869. |
| | A. C. Nisbet, Esq., Civil Surgeon do. | Report. March 3rd 1869, June 11th 1869. |
| | H. Godbier, Esq., in Medl. charge, Myan-Oung | Report, May 1869. |
| | Major Browne, Deputy Commissoner, Prome | Remarks. 5th July 1869. |
| | K. N. Macdonald, Esq., Civil Surgeon. Forwarded by J. White, Esq., in Medical charge of Prome - - - - - - - - | Report, 23rd June 1869. |
| | Major Munro, Asst. Commr., Thayetmyo | Letter No. 143, 11th May 1869. |
| | Dr. J. McAllum, Civil Surgeon, Thayetmyo | Report, 1st April 1869. |
| | Major McMahon, Depy. Commr., Toungoo | Remarks, 3rd May 1869. |
| | C. R. P. Parker, Esq., Civil Surgn., Toungoo | Report, 17th April 1869. |
| TENASSERIM. | B. T. Suffrein Esq., Officiating Civil Surgeon, Maulmain - - - - - - - - - - - - | Report 1st June 1869 |
| | P. G. Paul Esq. Medical Charge, Tavoy | 29th June 1869 |
| | C. W. E. Foster Esq. Medl. Charge, Mergui | 1st April 1869. |
| | Capt. Watson Depy. Commr., Shwè-Gheen | 7th April 1869. |
| | J. G. Cooper Esq. Hon. Asst. Surgn. in Medl. Charge, Shwè-Gheen - - - | |

State of Public Health generally during the year 1868.

7. The year 1868 has not been marked by any general or serious sickness. The people have been prosperous, epidemic diseases have appeared in certain unhealthy places, but here even the people have not suffered to any alarming extent. Employment for the laboring classes has been abundant; food has been plentiful and cheap, and the trade of the country has vastly increased.

Special tours on account of sudden outbreaks of serious sickness.

8. On two occasions only throughout the year was it found necessary for any special departure to particular parts of the country on account of the sudden outbreak of serious disease. On both occasions happily much good attended my presence on the spot, and in one case, I have every reason to believe that timely measures checked the spread of cholera which threatened to become epidemic. An account of these journeys to Toungoo on the Sittoung and to Hpagat on the Salween rivers will be found in the Appendix.

Special Sanitary Inspection Reports to be found in the Appendix

9. I shall now proceed to review in their regular order the several annual papers which have been submitted to me for that purpose: but, before doing so, it is necessary to state that, many of the towns and stations which form the subject of the reports by the Civil Medical officers of the Province, have been visited by me during the year, and their sanitary conditions and the measures which I consider desirable for their improvement, have already been brought to the notice of this Administration in the form of Special Sanitary Inspection Reports:—they are to be found in the Appendix. It will be unnecesary therefore to go over the same ground again here and recapitulate what I have already said in regard to them. A reference to these documents will be sufficient.

Division and order of Report according to Notification No 155 General, *British Burma Gazette*, 21st September, 1869

10. The order followed in this Report is in accordance with the instructions laid down in Notification No. 155, "General" *British Burma Gazette*, page 265, dated 21st September 1867. It is divided into two parts viz., I. Public Health and II Births and Deaths.

# I.—PUBLIC HEALTH.

## ARAKAN DIVISION—AKYAB.

Arakan Division not visited in 1868

11. No part of the Arakan Division, was visited during the year.

Dr Mountjoy's Report.

12. Dr. Mountjoy the present Civil Surgeon of Akyab has submitted a short report on the Public Health of that station for the year 1868. He was not in Medical Charge during any portion of that period. It is to be regretted that Dr. White, the late Civil Surgeon proceeded on sick certificate without furnishing an Annual Sanitary Report.

Public Health

13. The public health on the whole has been good. A few cases of Sporadic Cholera occurred during the year—Diarrhœa and Dysentery were common and said to be somewhat intractable in the rainy months. These diseases, and the constant presence of fever among the people distinctly point to defective drainage and water supply.

The cyclone of the 13th of November and its results.

14. On the 13th of November, a severe cyclone swept over the town and station, and committed very serious damage to both public and private property. Hardly a house was left standing, and a large number of the beautiful trees which adorned the place were thrown down. Much injury was also done to the stores of grain. The cultivation near the coast in many places was completely destroyed by inundations from the sea. A full and interesting account of this Cyclone has been written and published by Colonel Stevenson, the Commissioner of this Division.

Warned Civil Surgeon and the Magistrate to watch the Public Health.

15. Directly the news of this Cyclone reached me, I wrote to the Magistrate and Civil Surgeon of Akyab, and requested that they would watch the Public Health with more than usual care, and report to me at once should any increase of sickness appear among the unhoused inhabitants. Up to the end of the year nothing occurred. The town was quickly rebuilt

No Report furnished by either the late Civil Surgeon or the Magistrate.

16. I shall not now enter into the Sanitary condition of this town, as I could not visit it during the year under review. What changes may have been made in the twelve months in the interests of the Public Health I cannot say, as both the Civil Surgeon and Magistrate, who should have supplied such information, were relieved of their respective charges and no reports have been written.

A Special Report on Akyab will be submitted.

17. The sanitary condition of this town and station with a detailed statement of all that I consider necessary for its hygienic improvement, will form the subject of a special report to be furnished separately.

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## KYOUK-PHYOO.

Health of Kyouk Phyoo good. Bazaar not yet finished.

18. The health of the inhabitants of this town has been good. No epidemics have appeared in the year, and endemics are said to be unknown. The conservancy of the town has been well conducted. The drains have been kept free and there has been no overcrowding. The bazaar which is not yet finished will add greatly to the comfort of the people. Food will be inspected more regularly, thus ensuring to all classes that the necessaries of life are sold under wholesome conditions.

Measles, Small Pox and Cholera in Island of Cheduba.

19. In the Island of Cheduba a few cases of Measles were noticed, but the Deputy Commissioner, Captain Plant, immediately adopted measures for its suppression and sent medical aid to the people. Fortunately the disease did not spread and no deaths occurred. Again, Cholera, sporadic in character was noticed, but rapidly ceased. A few cases of Small Pox also were observed. This disease however shewed no tendency to spread.

Murrain among the cattle at Kyouk Phyoo.

20. In October Murrain broke out among some cattle, near Kyouk Phyoo. Captain Plant immediately had the sick animals segregated. The disease by this judicious step was confined to one spot and ultimately stamped

out. I have frequently observed that Murrain, Cholera and Small Pox are either met with contemporaneously in British Burma or they follow in each others footsteps. Whether the same conditions are equally favourable to the spread or development of all these diseases, or whether there can possibly be any connection or affinity between their specific germs, I am of course unable to say. In Arakan more than one observer has noticed that these diseases seldom visit the country singly. I mentioned this subject in a paper submitted to Government when Civil Surgeon of Akyab as far back as 1862, and extended observations have confirmed all I then said.

Suggestions for the improvement of the station

21. I would suggest for the further improvement of this station that the drains be constructed of permanent materials, and that the best wells be fitted with pumps and then covered in. Public latrines also are necessary.

Mr Thomas' figures incorrect.

22. Mr. Thomas has evidently made a mistake in the table he has given of the annual average rain fall for the past five years in Kyouk Phyoo. In all his decimal integers he has placed the decimal point one figure too far to the left.

Captain Plant, Deputy Commissioner's, great care and attention to sanitary matters

23. I desire to record here the great care and attention paid to Sanitation in this district by Captain Plant, the late Deputy Commissioner.

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## SANDOWAY.

Mr. Macrae's Report on Sandoway

24. Mr. Macrae, the Officiating Deputy Commissioner, has forwarded a very complete and interesting report on this town. He says under the sixth heading that, the drainage of the town has been well attended to in by gone years. This is an important statement, and one I wish to draw attention to presently in connection with the subject of drainage in malarious situations.

Neglect of Conservancy in town

25. I am not aware whether municipal taxes are collected from the people in this town. Mr. Macrae remarks that its conservancy was formerly attended to by convict labor, but since

intra-mural labor has been introduced in the Gaol nothing has been done. If taxes are demanded from the people for this purpose, it is not quite correct that they should also be called upon to sweep the streets themselves. A proper establishment with carts should be applied for at once. I have addressed Mr. Macrae a letter on this subject.

Confirmed Opium-eaters said to improve in health under confinement, is doubted

26. The Deputy Commissioner remarks that confirmed Opium-eaters improve in health when confined in Gaol and deprived of the drug, and Mr. Pyster the Medical Officer in charge of this station supports this statement, but adds, "there is great tendency to derangement of the bowels —particularly to hœmorrhage." I have had a large experience in the treatment of opium eaters and smokers in our Gaols, and I am bound to say that, the habitual indulgers in either habit are exceedingly apt to die of bowel complaints, if entirely and suddenly deprived of their accustomed stimulant, under the depressing influences of confinement with a restricted diet. The worst cases among the opium consumers who frequent our Gaols are seen in those who have committed a theft, to obtain means to purchase the drug. They are generally emaciated—in fact half starved. I have found that by depriving such men of opium altogether, the diarrhœa, which seems in this country to be the usual precursor of death in those largely addicted to this pernicious habit, is induced and runs a rapidly fatal course. This I say is my experience of the effects of opium smoking and eating as seen among our criminal classes. I have in some few cases by combining cutch with opium, and increasing the dose very gradually at the expense of the latter, broken the most confirmed habits. There are so many ways by which prisoners can obtain opium in a Gaol, that I much doubt the possibility, no matter what vigilance may be exercised by the Gaol authorities, of stopping its introduction altogther. It occurs to me that possibly the prisoners in the Sandoway Gaol have regularly received secret supplies and thus they have remained well and deceived the Medical Officer and others into the belief that a deprivation of the drug has been attended by excellent results.

The sale of Opium considered unnecessary in Sandoway.

27. It is a great pity that Opium should be sold in Sandoway at all. It is not necessary—there are no Chinamen here and the Burmese are not accustomed to it. As an instance let me mention that I have never heard of a Burmese woman smoking or eating opium. It would be considered a great disgrace to do either. What can the revenue amount to by its sale in a small place like Sandoway. It cannot compensate Government for the moral and physical degradation engendered—a point of considerable importance in a country so sparsely populated as this is. We are teaching the people its seductive properties by placing the drug within their reach. We are certainly supplying no want.

Fever produced by want of proper drainage.

28. Mr. Pyster says that fever prevailed in the town from "July to December of a severe type, after heavy rain and two separate inundations of the adjacent country." The want of proper attention to the drains no doubt had something to say to the presence of this fever. Sandoway was chiefly laid out by prisoners, and deep and good drains were constructed. I hope that the labors of former officers in the cause of sanitation will not be allowed to fall into helpless disrepair. Without prison labor it would be diffcult to perform now the structural works which they accomplished. A stitch in time is what is required to preserve old but good works. Arakan was at one time the most malarious climate perhaps in all India. When first we annexed the country it was generally inimical to the European constitution. A most fatal form of fever was endemic all along the coast, and many a poor fellow in the prime of life fell a victim to it. This fever resembled, I believe, that which is known in India as the "Farai.". For several years this fever may be said to have been got rid of in the chief stations, the measures employed were these, the levels were first obtained, then well raised and metalled roads were formed with deep lateral drainage, not mere cuttings in the soil—but drains which dipped down deep so as to answer the purpose of subsoil drainage . Many of these were rivoted with stone, bridges and culverts were built, swamps filled in and bunds with sluice gates constructed to keep out inundations; numerous trees were planted, good wells and tanks dug and all jungle religiously kept down. I firmly believe that

real sanitation in India was commenced in Arakan, and how this came about I am unable to say, but I have often heard the officers of the old Arakan Commission say that, experience taught them that a station could not be rendered free from miasm and made healthy, like Kyouk-Phyoo for instance, without such extensive operations. Who originated the system of works to be seen in Arakan it would not be very difficult to ascertain, for they all seem from their appearance of nearly the same date, the system however was most judicious as time has proved, and where the same principles are applied now to our towns in Pegu, similar results are obtained. The prisoners in our Gaols are no longer permitted to be worked outside the prison walls; it behoves all officers therefore in charge of towns and stations in this Division, as elsewhere in British Burma, to be careful while keeping Municipal works in thorough repair, to husband their resources where funds are levied for the purpose, or there never will be a balance in hand to provide for needed improvements. It must be remembered that all the stations in Arakan were formed by prison labor and that from henceforth free labor must be employed which must be paid for.

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## PEGU DIVISION RANGOON.

Original site of the town of Rangoon and present sanitary progress works.

29. The Magistrate's remarks on the Civil Surgeon's report are complete and important. During the year I have made numerous inspections of this town and its suburbs, and I have found it necessary to address the Magistrate frequently on the subject of conservancy. In my last year's report I mentioned some of the works which were at that time being undertaken by the Government through the Department Public Works. I also drew attention to the difficulties to be contended within a rapidly increasing town like Rangoon, in constructing it replete with all requisite sanitary appliances. The condition of the site now occupied by this town, sixteen years ago is generally overlooked by reporting officers, but I have not forgotten what it was when I landed in this country in 1854. I am fully sensible of all that has been done to improve it. The sanitary measures instituted from the first day of our

possession have continued to progress steadily and most satisfactorily ever since. I need hardly remind the Government that, our Engineers had simply to deal with a succession of swamps and low lying ground, the greater part of which has been raised, drained and good metalled roads constructed (I believe that there are upwards of one hundred miles of metalled roading in Rangoon.) A handsome well regulated town has been built, and those blocks which have been completed by the Department Public Works, are now healthy. Trees have been planted on each side of the roads throughout the town. The works at present in course of completion in the Chinese and other quarters, are a part of the same wise system which has been carried out elsewhere; and if these operations are not being executed so quickly as some restless people would wish—the want of labor, the vast amount of building space required for the healthful extension of our increasing population, the necessity of attention to other important duties and the needful funds, must be cited as the excuse for delay, if delay in the matter at all can be said to have taken place. Give us money and the labor, and the will and ability will not be found wanting to make Rangoon the most perfect town in the world.

The extent of works required

30. In structural works of a sanitary nature great advancement has been made during the year, and although that which still lies before us is enormous, no efforts are being spared to extend the good which has been effected, to all outlying quarters of the town.

Drains. Magistrates proposed new Conservancy, approved of.

31. The drains alluded to by the Magistrate as having sunk below their original levels, I brought to notice sometime ago, and I have every reason to believe that the evils mentioned will be rectified as soon as possible. The Magistrate's recommendations for the effectual disposal of the refuse sweepings of the streets are good. An increase to the conservancy establishment is most desirable and for that purpose additional funds are necessary.

Water supply is not sufficient.

32. I do not agree with the Magistrate that the water supply of Rangoon is adequate to the requirements of the people. He ad-

mits that it is deficient in the months of March, April and May. I desire to say a few words on this all important subject. There are a large number of wells in Rangoon. Some are situated in public places, but the majority are to be found in private enclosures. Those which dip into the laterite soil generally contain good water, and these are to be found in the higher land and to the north of the more densely populated parts of the town. Of late years very few additional wells have been sunk. As regards the total quantity of water contained in the town wells, it is true, is abundant enough, but the quality is another thing. It has been found that as the blocks have been built over and cesspools have multiplied, so the water has deteriorated in an inverse ratio in the same localities, until it has become so disgustingly impure, that no one can use it for any purpose whatever. The people therefore are driven of necessity to seek their supplies from the outlying wells, but from year to year as the population increases, the quality obtainable is not nearly equal to the demand, consequently in the dry weather, viz: as the Magistrate has justly noted in the months of March, April and May, a scarcity is really felt.

Good water where procurable. The new Royal Lake project.

33. The springs which are tapped in the laterite stratum are found to come from the north or high ground. This is most fortunate. The percolation in the subsoil tends to the south towards the river, and in this direction also all the drainage of the town is conducted. Thus the wells I have mentioned escape surface and other pollution. We cannot however continue to rely on these sources of supply. The town is spreading and not only is good potable water much needed in greater abundance, but the best wells when surrounded by buildings, gharrywallahs stables, and privies &c. must become contaminated and their usefulness destroyed, especially as they are now constructed. The subject of a proper water supply for Rangoon is of vital importance to the welfare of the community and now presses for an early settlement. I am assured that the Royal Lake project, about which so much has been written during the past five years is really to be carried out. Some of this water was submitted to me four years ago for examination. A quantity was at the same time forwarded to Dr. Macnamara, the chemical examiner to Government. Both our reports were equally

favourable. The preliminary works to improve and increase the capacity of the lake have been proceeded with for some time. The important steps to this end which have been effected by Colonel Fraser C. B. the Chief Engineer of British Burma are most judicious. I objected in letter No. 65, dated 12th November 1868, to the arrangement and collecting ground as originally proposed by another Officer. My objections were considered valid, and since that date the plans have been altered, and on visiting the locality and carefully going over the ground with Colonel Fraser, I expressed myself as perfectly satisfied with the present scheme which to my mind seems thoroughly practical and healthful.

Good water required in the suburbs and by the shipping.

34. When this water is laid on to the town, the supply being abundant for all purposes, the general health of the inhabitants will vastly improve. The suburbs however still require some consideration. The water supply for the shipping is also a matter of very grave importance, and should no longer be neglected. I would in concluding this subject recommend that the masonry of all the wells known to contain good water be properly reconstructed. They should then be fitted with strong pumps and covered in. The filthy wells on the other hand so plentiful in this town ought to be filled up. They are a nuisance and injurious to the public health, and as such their proprietors can be obliged to remedy the evil. In Poozoondoung, if it is impossible at present to include this quarter in the general system of water supply, new wells must be dug. They are most urgently required. In this quarter laterite soil crops up in several places and in it, doubtless, as in other parts of Rangoon an abundance of wholesome water will be found if sought for. Norton's tube wells or good cylindrical iron wells might be sunk and fitted with pumps as already mentioned.

Native burial grounds. Rules necessary for their better management.

35. The burial grounds of Rangoon are certainly better superintended than in any other part of Burma. Still I consider that rules are very necessary for their better management. In the Christian grave yards, graves cost money, and if a monument is erected an additional fee is demanded. The money so collected going towards the general expenses of management, &c. Why then should not similar

fees be imposed for a like purpose in the native places of *sepulchre*. After visiting and inspecting numerous stations for burning and interment in this country, I am satisfied that as a rule they are not supervised by a responsible Officer as they should be, and are frequently entirely neglected. For the improved health of towns and rural communities strict rules must be framed and enforced in all grave yards. These places moreover should be properly fenced in. This is a most necessary provision and one not usually attended to. The Magistrate does not agree with me that the graye yards in Rangoon are now too near to the town. I am sorry that I should differ with him in this respect, but if he will oblige me by taking a walk along any of the public roads, to the north or south of the quarter referred to, and stand to leeward during the process of burying a dead body, I think he will be sufficiently convinced on this point without any further controversy.

Importance of a Slaughter House for Rangoon.

36. I have more than once drawn attention to the subject of a slaughter house for Rangoon. I have also examined the plan mentioned by the Magistrate and condemned it as unsuitable. The Chief Commissioner is in possession of that opinion, vide letter No. 57, dated 18th June 1869. Last year I made the following remarks in my Annual Report:—"A properly constructed slaughter house is much required. The plan adopted at Thyetmyo is a good one and I strongly urge the providing of similar conveniences for Rangoon. The present shed near Poozoondoung is not readily accessible, and I know animals are killed in the town in consequence of this. Shambles pay well in all our large towns, and therefore the expense of building them should not form an obstacle to their erection. I am decidedly of opinion that more than one slaughter house is required for Rangoon. Adopting the Thyetmyo plan, no offensive smells are possible, and consequently the sheds should be conveniently situated." I am sorry to have to add that nothing has been done in the matter beyond the submission of the plan I have alluded to.

The evil of Cesspools in towns. Their horrible state in Rangoon.

37. Cesspools are not permissible in large towns. I would like to see them got rid of in all situations. In Rangoon, the soil in many places is sodden with excrement. The air is render-

ed noxious and at times positively unbearable by the same means, and the water is polluted to a degree so sickening it would be impossible to exaggerate if all the most fulsome terms in our vocabulary were employed to express its condition. It is acknowledged that the decomposition of the excreta from the human body is the same thing as the putrefaction of animal matter itself, under certain conditions of heat, moisture and season, the emanations from masses of such corruptions are known to produce, foster and spread diseases the most fatal to human life. I must allow that as yet Rangoon generally has escaped any serious Epidemic outbreak, and I think this admits of easy explanation. The Sanitary works which have been effected in the finished parts of the town are extensive and of a permanent nature, and the increasing filthiness in them has not reached that stage of putrescence, when the evils shall out-balance the good. I conceive that this is the reason why Epidemics have not extended to these quarters. The inhabitants of the denser parts of the town, which have not yet received sanitary attention escape also, as I have shewn, one great source of danger to health. They cannot possibly make use of their well water. The cesspool system is in operation in all directions, and such cesspools! In the unraised and undrained suburban quarters there are frequently no pits. Everything is simply passed through holes in the floors of the overcrowded houses on to the ground beneath. Here sickness is always rife in one or other of the forms of the Zymotic class. The people are squalid and sickly in appearance, and cholera, small pox, measles and fever of a low typhoid type, cause in the aggregate a heavy mortality. These hot-beds of sickness are ever threatening the health of the rest of the town. We never feel safe against a sudden Epidemic outbreak, which shall extend to the whole community, and we are quite aware, that the ground is being admirably prepared for such an invasion.

The conditions of the cesspools from one end to the other of Rangoon are equally obnoxious. It is easy enough to condemn the system, but that does not mend the evil. We cannot as many would wish prohibit the use of privies, unless we are prepared to substitute something better in their place. And this substitution of something better in their place is exactly what we desire some clever fellow will discover.

Quick removal of town sewage necessary. Revd. Mr. Moules dry earth system impossible.

38. The quick and decent removal of the town sewage is a matter only second in importance to the supplying the people with good potable water. The solid and liquid excreta should be taken out of the the town at least once daily. This is the *sine-quâ non* of whatever plan may be proposed for the purpose. The dry earth system is out of the question. A few words will dispose of this part of the subject. Rangoon with a population say of 100,000 souls, would require to have carted into it and carted out again, earth and soil amounting in the aggregate to considerably over 1,000 tons (one thousand) per diem. I say considerably over 1,000 tons, because I have based my calculations on the supposition that a latrine is used only once by each person. If the necessary carts and labor were available the cost would swamp the municipal funds. If in a Gaol this dry earth system needs such constant supervision and nice working to ensure success, how is all this to be effected in the town and who is to pay for it? Besides in the S. W. monsoon dry earth is not procurable. It would therefore have to be stored somewhere, and there is no room for that somewhere, in the dry weather. The quantity required would be a six month's supply, or in round numbers at 1,000 tons per diem, 180,000 tons (one huudred and eighty thousand)—a very considerable mountain—*Risum teneatis, amice?;* on the face of it this is simply rediculous. "The cheapest way" of disposing of all drainage and sewage "is by drains, laid to an oulet, and if drains be provided there is no reason why the latrine should not be connected with them." The question of the best method of drainage and sewerage for our towns must come to this I believe the most healthful and economical system will be that which will convey away all the water, "fluid and solid excreta by one process" in glazed earthenware or iron pipes provided with flushing apparatuses and pumps where necessary. All other schemes have their weak points and are utterly impracticable either for want of funds, labor or effective supervision of the management of their complicated arrangements.

Reason why dry earth system is unsuitable for all large towns in British Burma

39. The dry earth system we have seen therefore cannot be extended to this town, and if not to Rangoon then *cæteris paribus* not to any of our large towns. In this

country we never could obtain the required labor for the mixing and removal of the poudrette, much less to cart into the town the daily quantity of dry earth Burmese to commence with will not, unless under compulsion, perform the duties of nightmen, and to import this class of individuals from India in sufficient numbers for the purpose, would I fear cause a large expenditure. No municipal funds could stand the drain upon them to meet the high wages alone, these men demand in Burma. I am convinced in my own mind that a regular system of sewerage is the cleanest and most effectual remedy. I am satisfied that nothing in the long run will so thoroughly and cheaply get rid of all town sewage, as the plan I now suggest. Other schemes may very possibly be superior but they will be found in practice to fall through in their management, or for the want of money to successfully carry them out. Time will prove that I am right. The adaptation of such a system of sewerage to our towns and the details of such works are well understood by all engineers. We may therefore with the greatest confidence leave the matter in their hands.

Temporary measures necessary

40. In the meantime however something must be done to improve the present state of the town. A regular system of sewerage will cost money, and before this could be sanctioned much time must be taken up in planning and examining the subject I think that the Magistrate's proposal is a good one, and, as a tentative measure therefore, I am prepared to recommend its adoption. There are one or two points which do not effect the general working of his plan, but to which I cannot accord my approbation. For instance the use of lime is highly objectionable. Dry earth, coal tar and McDougal's powder must be substituted. These and other minor matters can be attended to when in consultation with that Officer.

Nature of endemic fever in the town

41. The fever mentioned by the Magistrate is a disease which has for sometime steadily held possession of the overcrowded Yanbonquin and other quarters. It is endemic and has proved very fatal. I have watched it closely, both when in practice here and since holding the post of Sanitary Commissioner, have always looked upon the disease as a form of remittent fever of low typhoid type, and I begin to believe that it is

more serious still in its nature and of that class met within Indian Gaols. In letter No. 51 dated 5th September 1868, I requested the Health Officer of Rangoon to favour me with his opinion. His reply is appended. As the D. P. W. extend the town improvements, in raising, draining and road making by these means enabling the people to spread—this endemic is gradually ceasing, and I hope that before very long we shall be able to number it with the things of the past. Both the Deputy Commissioner and myself have done all we can to improve these quarters, but they are mere swamps and must remain so until their turn comes to be reclaimed. The chief situations in which this fever occurs are subject to tidal inundations, and it is impossible to prevent overcrowding. The labor market in Rangoon is a large and most important one. The demand for work-people by the shipping, rice and saw mills, and by the D. P. W. is very great. Wages are good, consequently a vast concourse of people assemble in the suburban lots as squatters. We cannot thin them out, simply because we are unable to provide more suitable localities for their location. Rangoon increases so rapidly that the means at the disposal of the authorities are not sufficient to enable them to keep pace with the requirements of the people. The poorer classes are therefore overcrowded, and they may be said to kill themselves off by associating in large numbers and living in their own filth. I must say in justice to all here in authority, that everything is being done that can be done, and that no stone is left unturned for their sanitary welfare, but the magnitude of the work is such that it cannot be effectually coped with quickly without money, and that is not to be had.

Magistrate considers that the Public Health has not suffered to any serious extent during the year.

42. With reference to the last para of the Magistrate's report, I think he errs in presuming that the Public Health has not suffered to any extent during the year. Taking the whole population of Rangoon and striking the death rate, no doubt the percentage is nothing out of the way, but if we examine the proportion of deaths in any one of the suburban quarters to the population it contains, we shall find that public health, in them at any rate, has suffered very remarkably.

Cholera in Poozondoung. Its probable causes.

43. In para 8 of the Civil Surgeon's report it is mentioned that nine persons were attacked by cholera in the month of May in the Poozoondoung quarter, and notwithstanding that a careful enquiry was made, the cause of the appearance of the disease could not be discovered. It occurs to me that the terrible effluvia from the decomposing broken rice and paddy husk lying on the banks of the creek may have had something to do with this "sporadic" out-break. An idea may be formed of the quantity of waste from the rice mills and winnowing machines, which is thrown into our creeks and rivers at the seaport towns of Rangoon, Maulmain, Basscin and Akyab, when I mention that about twenty (20) millions of baskets full of husk &c, each basket on an average measuring about a bushel (English) is disposed of in this way, during each season. In Poozoondoung all the husk mixed with broken rice, bran and grit is thrown on to the banks of the creek, there to ferment and rot under the influence of the rise and fall of the tide and intense heat of the sun. Suitable machinery to separate the broken rice from the husk, and small jetties run out into the creek from which the latter might be cast well into the stream would obviate much of the mischief I have mentioned. This simple arrangement I proposed some years ago in one of my health reports, but no notice was taken of it. Now I desire that an order may be passed enforcing this very necessary precaution. I do not believe that the husk produces much harm in itself. It contains but little woody, that is vegetable matter. It is chiefly composed of silica: however, the small quantity it does contain can be made injurious to health when placed on the banks of a creek in bulk measuring thousands of tons.

Vaccination required. A new system much

44. I have watched the working of our vaccine-department, and I have seen the results of the practice in other places besides Rangoon. Vaccination will never succeed in this country so long as the present system is followed. The practice must be placed under the immediate charge of one responsible officer, who shall devote his whole time and attention to its working, provided with a proper staff of assistants. I have already furnished this Administration with some particulars of the practice of vaccination in this country. I shall not, and especial

ly as the department is not under me, say any more on the subject here. I am not prepared however, for reasons already given, in letter No. 79, of the 9th January 1869, to advise the Administration to prohibit the practice of inoculation among the people. Establish vaccination and then inoculation should certainly be made illegal where so established.

Contagious Diseases Act should be extended to the town Lock Hospital required

45. In regard to venereal complaints, it is highly desirable that the Contagious Diseases Act should be extended to all our seaport towns. The Cantonment rules in force in Rangoon were extended to the town in October last, but no funds were provided to erect a Lock Hospital with. The Magistrate, Major Duff, tried, but could not succeed in hiring a house for the purpose, I forwarded for the information of Government a full report on the subject of venereal diseases in the Town of Rangoon, when Civil Surgeon. I hope no further delay will take place in this matter.

Working of experimental Public Latrines.

46. The Government experimental Public Latrines near the Iron Bazaar have not found that favour with the people we anticipated they would do when they were erected. The reason that they have not been altogether a success is owing I think to the numerous private privies in the neighbourhood. The people naturally prefer the privicy of their own enclosures to a place of public resort, and it is only reasonable that they should do so. They are very useful institutions nevertheless, and are conveniently situated for all frequenting the Bazaar. The Magistrate informs me that only one of these latrines has been in use, during the year.

Venereal diseases and public latrines not mentioned in Civil Surgeon's or Magistrate's reports

47. I regret that both the Magistrate and Civil Surgeon have omitted in their reports to furnish any information regarding Venereal diseases or the working of the public latrines. Their opinions would have been valuable.

## BASSEIN.

Dr Nisbet's report on Bassein.

48. Dr. Nisbet, the Civil Surgeon of Bassein has submitted a very complete Health Report. It is the most valuable of all the reports which have reached me this year. Early in Feb-

ruary last, I circulated to all Officers for the better arrangement of subjects, a list of the headings, which I desired might be followed in the preparation of their Annual Reports. Dr. Nisbet has attended to those instructions as also have a few others, and exhibited that interest in furnishing complete information which I hoped all Civil Surgeons and Medical Officers in charge of stations would have evinced.

Topographical sketch of district, and causes of sickness &c

49. Dr. Nisbet's description of the station and district of Bassein is very interesting. His "topographical sketch" is accurate. It is quite true, as he says that, the "natural peculiarities of the country render the people living in it liable to many diseases," but it must also be remembered that these peculiarities are in some respects necessary to its welfare, and are inseparable from its position as a rice growing country. The Rangoon district is equally subject to inundations in its delta. I will not say that these periodic floodings are necessary to cultivation, altho' rice requires everywhere a large amount of water. The tract of country lying between the Bassein and Sittoung rivers and sea coast, is quite equal in extent to the Soondabunds of Bengal. It is intersected by innumerable rivers and creeks. All these it would be impossible to bund, nor is such a step desirable. In the lower parts of both districts there are few or no inhabitants. But to improve the circles now occupied, and to reclaim the valuable arable land subject to deep flooding, where people can be induced to settle, is a duty of the Government, and, it must not be forgotton that this is being done. The bunds on the Irrawaddy have been energetically pushed on in a southerly direction during the past two years, and Colonel Fraser now, I believe, intends to embank certain rivers and creeks in the Bassein district. These when finished will I have no doubt greatly improve the health of the people and do much to remove the evils which Dr. Nisbet mentions. One of the proposed bunds will immediately effect the Bassein river itself, which is in reality a large outlet of the Irrawaddy, although it collects a very considerable body of water from the last watershed of the Arakan hills in their southern portion. I understand the connection between the two rivers is to be severed, that is, the opening in the main streams is to be closed up. * I cannot express an opinion on

*Since writing the above I have learnt that this opening to the Bassein river is not to be closed up.

the effect this will have on the climate of Bassein, as I am not at this moment thoroughly acquainted with the subject. The alteration of the natural channels of a district is often an engineering necessity; and when such changes are made for the improvement of a country by reclaiming large areas of fertile land, their execution must not be frustrated because some village or town may probably be rendered unhealthy by the operation. We find generally in British Burma, as Dr. Nisbet has justly pointed out, that, the want of drainage in a district is a fruitful source of "Malarious diseases". I therefore trust that the bunds suggested by Colonel Fraser will be followed by marked benefits to the people as well as to the revenue. The Sanitary officer knowing that the water courses of his district are to be altered or modified, should consult with the local engineer and recommend any re-arrangement of the drainage of the towns under him, that he may deem necessary. I have found that where bunds and canals or deep drains are constructed, as far as health is concerned good universally results, I cannot therefore say that I feel any anxiety lest sickness may be increased by Colonel Fraser's propositions. I have no doubt that in some instances the people will find their old sites unprofitable and perhaps untenable,—for instance the fishermen in the upper Bassein district. Well, they can remove to other places—the country is wide and there is no hinderance to their suiting themselves. Cultivation is far more profitable than fishing, and I observe that when good land is available the Burmese prefer the former occupation of the two. However should they continue their old trade there are still, no doubt "as many good fish in the sea as ever came out of it," and water to the south will still be plentiful enough. The markets also must improve as people settle. What we require is cultivation, and until the land is placed under the plough, it cannot be healthy.

Sanitary state of towns and villages in Rangoon and Bassein districts.

50. In April I travelled over some six hundred (600) miles of the Rangoon and Bassein districts, visiting numerous towns, villages and hamlets. In some, attempts have been made to improve them, and I have no doubt in time great changes will be brought about. Most village improvements can be effected, when the district Officer has his heart in the work, with-

out much trouble. The Burmese as a race are not averse to order and cleanliness. They like to have their towns and villages nicely laid out, and when all are subject to the same rules, they are ever ready to build good houses, plant trees and cut drains if encouraged to do so. A Burman never objects to assist in these operations where he sees that they are for his own good. I have now mixed a great deal with these people and I never yet heard the shadow of a complaint raised, because their towns had been regenerated by district Officers. The people of Shwè Doung, a town containing upwards of 10,000 inhabitants, on seeing the great changes made in Prome for the good of all, requested Colonel David Brown, the Deputy Commissioner, to come and effect similar changes for them. He went there and the people pulled the old place down, and rebuilt it according to his plan and planted trees along the road sides. It is now neat and in regular order. The houses are good and the people are ever so much the more healthy. Look at the vast sums of money the Burmese are ever ready to expend on works of merit. Look at the handsome monasteries, wells with bathing places set apart, bricked from top to bottom and the comfortable and substantial travellers' rest houses &c., which are built all over the country, and the immense amount of good a district Officer can bring about by exerting his influence and directing these resources wisely, is incalculable. The month of April is usually a healthy month in the interior of this country, and the climatic diseases I observed on this tour were few. Bad drainage, overcrowding, want of village conservancy, offensive privies, in some instances bad water, and insufficient care in the selection and preparation of food, were the most prominent drawbacks to health noticed by me. To these subjects I would desire to draw the particular attention of all district and Sanitary Officers.

Bazaar latrine requires an establishment.

51. The latrine near the Bazaar mentioned by Dr. Nisbet is a very good one. It is built of corrugated iron and is on the dry earth principle. It should be provided with an establishment without delay. It will be the duty of the health officer to point out where the poudrette is to be deposited. I need not say that this soil must not be thrown into the river or any of the water courses.

52. Intra-mural labor is now the rule in British Burma, and however much this may be thought an improvement by Gaol Officers, I cannot but regret the loss of the labor to our towns. Up to a very recent date the conservancy of most of our large towns was performed by convicts. Now of course this is no longer permissible and free labor has to be employed. The work is consequently in some cases very imperfectly done, while in others it is not done at all, simply because municipal funds are not available.

Difficulty of conducting conservancy operations with free labor Want of funds

53. The bazaar is well built and very proper attention is paid to its cleanliness. This is one of the best bazaars in the whole country and is well attended.

Bazaar is kept in excellent order. It is a good building.

54. Dr. Nisbet draws attention to the imperfect water supply of Bassein. This might be remedied, I think, by sinking more wells and fitting all with good pumps, and covering them in as I have recommended should be done in Rangoon. In the low parts of the town Norton's tube wells might be tried. There is one point in connection with this subject which desires the attentive consideration of this Administration, and which cannot be passed over ; and that is, the necessity of strictly supervising the water supply for the Shipping. At low tide the ships' tanks are filled from the river, the water being then fresh. This is a very improper and dangerous source from which to obtain drinking water, and it is not from necessity that the practice is followed. The largest ships (1,500 tons) visiting this port, lie along side either bank of the river, and communication with the land is established by stages and planks. In this position most vessels are berthed and loaded, nothing could be easier therefore than to obtain water from the shore. The Bassein river receives into it the drainage of all the towns and villages which line its banks, and should cholera be present in any one of them, the disease is soon conveyed to this port and the sailors are generally among the first to suffer. In Bassein itself the Burmese seldom make use of the river water—they prefer the wells. I can only suggest one remedy for this and that is the appointment of a Health Officer.

Imperfect water supply of Bassein Health of Sailors endangered

Necessity for appointing an Health Officer to the Port.

55. Upwards of sixty thousand (60,000) tons of shipping, to use a mercantile expression, enter and clear from this port every rice season, and the crews are chiefly, I may almost say entirely European. I have shewn the position in which the ships usually load and the easy communication which is kept up with the shore. There is no let or hinderance therefore to the Sailors going into the town and villages whenever they please: worse, there is nothing to prevent strangers visiting the ships. Venereal diseases are as common in Bassein as they are in Rangoon, and the mischief these poor creatures run into is really terrible. Ship Captains are not obliged by law to engage a Doctor to attend their crews while in Harbour, and a great many neglect to do so, consequently the fears entertained by Mr. Bayley, the Secretary to the Government of India, expressed in his letter calling for information on the subject, are only too true, and we have every reason to believe, that in addition to rice &c., British Burma exports to European and other countries Venereal diseases in their worst forms. The class of men who enter our ports in ships are of a very low order, and usually exceedingly ignorant and helpless. They come it is seen in no mean numbers and we are bound to protect them at least against disease, if only for our own interests, setting aside altogether the duty we owe to our fellow creatures as a paternal and Christian Government. What ought to be done is simple enough. The Contagious Diseases Act must be extended to the port, a Lock Hospital should be built and the Civil Surgeon, as the only European medical gentleman in the station, should be appointed Health Officer of the Port as well as of the town.

Opium and Gunjah considered injurious to health.

56. Dr. Nisbet agrees with all medical men in this country that the effects of Gunjah and Opium eating and smoking on those who indulge in their use, is most injurious.

Slaughter houses improperly situated.

57. The slaughter house is situated on the bank of the river and the blood and offal are thrown into the water. It is true that the buildings are kept clean and are at a considerable distance from the town. I object however to their position, as I consider that our rivers should be kept free as possible from pollution. I

therefore recommend a more suitable site being chosen as soon as possible.

The cleanliness of the town of Bassein highly creditable to Dr. Nisbet, the Health Officer.

58. In concluding my remarks on the Sanitary requirements of Bassein my best thanks are due to Dr. Nisbet for his able and interesting report. I desire also to record here, that the town, station and institutions of Bassein under his charge, exhibited, at the time of my visit, a neatness and cleanliness highly creditable to him as Health Officer.

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## MYANOUNG.

Mr Godbier did not hold charge in 1868.

59. Mr. Godbier did not hold medical charge for any portion of the year 1868. He has notwithstanding submitted a careful report. My special Sanitary Report on this station will be found in the appendix.

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## PROME.

Sanitary Commissioner's Report to be found in the Appendix.

60. During the year, I visited this station and submitted a special Report on its Sanitary condition. Still I have a few words to say about it. Dr. Macdonald still holds to the belief that the rain fall of Prome seldom exceeds 40 inches. In former days 70 was looked upon as the average. It is immpossible to find the records at this date, I must therefore recommend that Major Browne's suggestion be acted upon, and that another instrument be forwarded to Prome. The readings can then be compared and the truth ascertained.

Plan of operations to fill in Prome swamp has been rearranged

61. The proposal to form a series of tanks in the old moat was objected to by me, and the papers were submitted to the Sanitary Commissioner with the Government of India, for opinion. He suggested that it would be better to fill in the moat forming as few tanks as possible, rather than leave the filthy place as it is. He also recommended, to meet my objections, that filtering apparatuses might be placed at the termination of the street drains to purify the water before it entered the tanks.

Colonel Fraser after visiting the spot has rearranged the plan of operations. The drainage of the town is not to be conducted into the tanks. The latter are to be filled from the Narweing creek, and as occasion requires this water is to be used to flush the town system of drainage which will of course be constructed quite distinct from the tanks. The land reclaimed is to be sold, and as room is urgently required for building purposes, this will be greedily bought and built over. Colonel Fraser has promised me that as money becomes available he will gradually fill in all the tanks also. The tramway is busily at work. He may therefore look forward to an improved state of the Public Health as the work progresses. The frequent outbreaks of epidemic diseases in Prome, and the severity of the endemics, have long convinced me that the ditch which surrounds the town, and swamps in the vicinity, should be filled in, and I only regret that this cannot be accomplished by one operation. The great extent of the swampy ground about this town obliges the people to cramp themselves up and overcrowd. In the meantime therefore, until the present improvements are completed, sickness must prevail. It is quite natural for the unacquainted with the condition of this frontier city and its surroundings to say, why not oblige the excess of people to disperse? That is just the difficulty, Prome is like Rangoon so far; where is the excess of population to go to? All available building sites are occupied and the immigration seems endless.

Importation of Measles by Madras Coolies.

62. Dr. Macdonald makes an important mistake in the designation of the coolies who introduced measles into the town in the early part of the year. They were not Burmese at all, but natives of India who came up with some cotton machinery for Messrs. Todd, Findlay's establishment, from Rangoon.

Small Pox and Vaccination.

63. The Small Pox was a continuation of the same epidemic which visited the station in the previous hot season. The adult Burmese are nearly all inoculated, while the children under five years are altogether unprotected, and it is among the latter that the greatest mortality occurs. Vaccination will check the ravages of this loathsome disease; but as I have said unless a properly organized vaccine department is established

we can do very little real good. The present system is worse than useless, and from the careless manner in which the practice has been too often I fear conducted this great prophylactic is not appreciated by the people.

Cholera imported from Burma Proper. Necessity for observing first cases.

64. Cholera was undoubtedly imported into British Burma from across the frontier. In Upper Burma and especially at Mandalay, the capital, the disease had been epidemic for some months. I do not doubt that the habits of the people rendered them more amenable to attack, but all the exposure in the world at "Poays" or any where else, and the consumption of vegetables, will not produce cholera unless the germ of that disease is present also. The cholera contagium, whatever that may be, is a specific poison, and when once we know how it is produced we shall have won half the battle; and whether the remedy is discovered or not at the same time, we shall at any rate be able to congratulate ourselves that, "prevention is better than cure," and by the employment of timely measures avoid producing the disease. The spontaneous generation of this poison in any place in British Burma I do not believe in. It is invariably imported and this is what I wish all medical officers to bear in mind, because, by particularly noting first cases of the disease, not only can the progress of an epidemic be traced, but frequently by taking proper precautions, its virulence may be lessened and its spread perhaps checked. Too often this is not thought of until the disease has become established, and the mischief is done and the opportunity is lost.

Health Officer for Prome. Delegation of legal power to sanitary inspr. not approved of

65. In my last Annual Report I recommended that the Civil Surgeon should be appointed Health officer of Prome on the usual salary. I cannot however support Dr. Macdonald's views on the subject of delegating any legal powers to that officer. The Magistrate of Prome and Deputy Commissioner in charge of the district, are ever ready to carry out all needful sanitary recommendations made by the medical officer. I observed no delay on their part when inspecting this station, in the prompt execution of such duties; on the contrary, I was very agreeably struck with the great interest evinced by the Deputy Commissioner in his desire to introduce sanitary reforms and to maintain thorough cleanliness.

Extent of Population, Venereal diseases &c.

66. Prome contains a population of at least 25,000 inhabitants, and this number is increasing daily from immigration alone. The Burmese marriage law is a most simple one. Marriage in fact may be said to be a mere matter of convenience, and as the wants of the people are few and the responsibilities so light, the tie is as easily sundered as joined. Most women are therefore married or kept in a state of concubinage. Thus the conventionalities of society have not as yet necessitated the demand for prostitutes in any great numbers. The floating population which is exceedingly large, boatmen for instance, usually single men and coolies, are the classes who create a demand for loose women and in the positions frequented by them they are to be found. Veneral diseases in this manner are imported and exported. Fortunately as the prostitutes are few and as there is already a small Lock Hospital at Prome, their regular inspection and supervision would be a comparatively easy matter were the Contagious Diseases Act extended to this town, which I desire may be done. As all the women are said to be diseased it is most necessary that the act should be enforced. Much good would result to the people themselves, and the effect produced would also be sensibly felt in the garrison at Thayetmyo. I trust therefore that the administration will recommend my proposal.

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## THAYETMYO.

Sanitary Commissioner's Report to be found in the Appendix.

67. My letters on the state of the Gaol at this station and Sanitary Report on the town &c., will be found in the Aappendix.

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## TOUNGOO.

Cholera outbreak in Gaol—origin not traced.

68. In the month of August cholera appeared in the Gaol at this station and I at once proceeded to render aid on the spot. My report on the Gaol and town will be found in the Appendix. The cholera was not traced. The disease, however, was known to be present among the wild tribes in the hills to the East, and it is presumed to have been extended from thence to

Toungoo, but I could not discover by what means, at the time of my visit. Cholera had, as I have already shown visited Mandalay, and on referring to the map it will be seen that Toungoo is directly south of that city. The contagium may have come down the river. It may also have been introduced into the Gaol by a prisoner from an infected locality, but this could not at the time be satisfactorily determined.

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## TENASSERIM DIVISION.

### MAULMAIN.

Health of Maulmain.

69. Dr. Suffrein, Officiating Civil Surgeon has submitted an interesting report on the Public Health of this town. In the month of December I inspected Maulmain; my report will be found in the Appendix.

As yet no conservancy establishment has been sanctioned, in fact there are no funds available for the purpose. A few coolies are occasionally employed to make the principal streets look a little nice and to clear out the worst drains. Notwithstanding the filthy state of the town the public health has been remarkably good. Dr. Suffrein says "that the absence of epidemic disease, and the low rate of mortality during the past year, speaks volumes in favour of the salubrity of Maulmain." The subject of funds for the general conservancy of the town, is now, I believe, under consideration. It is very necessary that something should be done, and that quickly.

Water supply.

70. The wells in Maulmain should be cleared out regularly every year, and if they are not in sufficient numbers, I would suggest the sinking of additional ones in the laterite soil. All the wells should have pumps fitted to them as I have proposed for other towns.

71. Maulmain owes its healthful climate chiefly to natural drainage and a laterite soil.

## TAVOY.

Town reported healthy.

72. Mr. Paul who has submitted a report on this station was not in medical charge during any portion of the year. The town has been healthy. No remarks accompanying this document by the Deputy Commissioner, I am led to infer therefore that all the medical officer has brought to notice is approved of. My Inspection Report on this town will be found in the Appendix. The measures I have therein recommended for its sanitary welfare should receive attention.

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## MERGUI.

Report submitted for official instead of calendar year.

72½. Mr. Foster's report is for the official year 1868-69 I returned this document once and requested that the Annual Report might be drawn up for the calendar year 1868 only. Some misunderstanding however must have occurred as the same papers have again reached me. I cannot at this late date return them a second time for revision, as the mail steamer only calls at Mergui once a month. Mr. Foster has entered into occurrences of the present year, which is unfortunate, as they will have to be reviewed in my next Annual Report, and I wished to keep this complete for the year only for which it is submitted. The outbreak of cholera mentioned was a continuation of the same disease in a southerly direction which I witnessed at Thoyne and have reported on separately. The disease spread down the hills to the East among the Kareen tribes. The history of this visitation is now being collected.

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## SHWE GYEEN.

Sanitary Commissioner's Report to be found in Appendix. Three towns paying Municipal Taxes and not provided with Conservancy establishments.

73. I have already submitted a report on this town. It will be found in Appendix. I desire now to draw the attention of the Administration to para 3 of Captain Watson's remarks on the Civil Surgeons Report. The three towns in which Municipal taxes have been collected for years, and which he says the Government steadfastly refuses to sanction being spent on their

Conservancy, have been visited during the year and noticed separately in my Inspection Reports. I hope orders will be passed on the subject of the proper disposal of these funds as early as possible.

Food of Prisoners in Shwè-Gyeon Gaol insufficient. Explanation of deficiency.

74. Agreeably to instructions conveyed in the last para of Chief Commissioner's letter No. 395-4, dated 4th September 1868, I inspected the Shwè Gyeon Gaol accompanied by Captain Watson, early on the morning of the 15th of October following. My letter No. 57 in reply, dated the same day will be found in the Appendix. In para 6 I stated that the "food was very insufficient." This I think requires some explanation here, and that explanation I now purpose to give. On examining the day's rations, I found that four (4) ounces of fish with the bones, and four (4) ounces of vegetables only, were supplied for the prisoners' morning meal. The rice was in proper quantity, but beyond these articles there was nothing,—no oil none had been allowed for two years, and salt there seemed to be some doubt about, at any rate, it was not produced on my requesting to see it. I was told that the exact counterpart of the mornings meal would be served out in the evening. The Gaoler, contractor, or whoever he was—a native, assured me that the prisoners were not fed by scale, but according to what one rupee and 4 annas per prisoner per mensem would purchase in the Bazaar, no matter how prices might vary at different seasons! There were fourteen (14) prisoners in the Gaol undergoing sentence, thus between them they had the very liberal sum total of sixteen (16) ounces of fish and vegetables, or one (1) ounce, two (2) drams and (4) grains per man per diem!! Intramural labor was not practised, and I therefore presume to think that the prisoners were fed outside the Gaol by charitable persons or friends, or certainly they would very soon have starved on such a diet. They would probably have died of "famine fever" or by whatever name the disease might have been called. I see from Dr. Planck's (late Inspector General of Prisons in British Burma) Report, dated Rangoon, 4th August 1868, page 190, para 3 that, his statement of expenditure for Prison and Hospital diet in this Gaol, no charge is entered for oil for 1867-68. The *fact* therefore that the prisoners did not receive during

any portion of that year, a particle of this most necessary article of food is incontrovertible.

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## II.—BIRTHS & DEATHS, 1868.

Reports and Returns.

1. The following is a list of the Reports and Returns which have been submitted.

### ARAKAN DIVISION—AKYAB.

1. CIVIL SURGEON'S MEMO.
2. MAGISTRATE'S RETURNS—Four.

### KYOUK PHYOO.

3. ASSISTANT COMMISSIONER'S Letter.
4. MEDICAL OFFICER'S Report.
5. DITTO. RETURNS—Four.

### SANDOWAY.

6. OFFICIATING DEPUTY COMMISSIONER'S Letter.
7. MEDICAL OFFICER'S Report.
8. DITTO. RETURNS—Four.

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### PEGU DIVISION—RANGOON.

9. MAGISTRATE'S REMARKS ON CIVIL SURGEON'S REPORT.
10. CIVIL SURGEON'S Report.
11. MAGISTRATE'S RETURNS—Four.

### BASSEIN.

12. DEPUTY COMMISSIONER'S REMARKS ON CIVIL SURGEON'S REPORT.
13. CIVIL SURGEON'S Report.
14. DITTO. RETURNS—Four.

### MYAN-OUNG, HENZADAH, KYAN-GYEEN AND ZALOON.

15. MEDICAL OFFICER'S REPORT.
16. ASSISTANT COMMISSIONER'S RETURNS—Sixteen.

### PROME.

17. DEPUTY COMMISSIONER'S REMARKS ON CIVIL SURGEON'S REPORT.
18. CIVIL SURGEON'S Report.
19. DITTO. RETURNS—Four.
20. MR. WHITE'S NOTE ON CIVIL SURGEON'S REPORT.

### SHWE-DOUNG.

21. CIVIL SURGEON OF PROME'S REPORT.
22. DITTO. RETURNS—Four.

### THAYETMYO.

23. ASSISTANT COMMISSIONER'S REMARKS ON CIVIL SURGEON'S Report.
24. CIVIL SURGEON'S Report.
25. ASSISTANT COMMISSIONER'S RETURNS—Four.

### TOUNGOO.

26. DEPUTY COMMISSIONER'S REMARKS ON CIVIL SURGEON'S REPORT.
27. CIVIL SURGEON'S Report.
28. DITTO. RETURNS—Four.

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## TENASSERIM DIVISION—MAULMAIN.

29. MAGISTRATE'S LETTER.
30. OFFICIATING CIVIL SURGEON'S REPORT,
31. MAGISTRATE'S RETURNS—Four.

### TAVOY.

32. DEPUTY COMMISSIONER'S REPORT,
33. DITTO. RETURNS—Four.
34. MEDICAL OFFICER'S Report.
35. DITTO. RETURNS—Four,

### MERGUI.

36. CIVIL SURGEON'S Report.
37. DITTO. RETURNS—Four.

### SHWE-GYEEN.

38. DEPUTY COMMISSIONER'S REMARKS ON CIVIL SURGEON'S REPORT.
39. CIVIL SURGEON'S Report.
40. DITTO RETURNS—Four.

Old Forms still in use Revised Returns under consideration.

2. No alterations have been made during the year in the Registration Returns of the Province. New forms are very desirable and the revision of those now in use is under the consideration of the Sanitary Commissioner with the Government of India.

3. The new returns should be extended to the district as well as to all large towns. This is important, as then, not only would the healthiest parts of the country be made apparent, but they would disclose the comparative state of health between the Urban and Rural communities, and draw our attention to special causes of sickness affecting either section of the population.

The importance of extending the new registration returns to Rural as well as to Urban populations.

4. The result of the registration of Births and Deatns in the 17 large towns of the Province are given in the four following Returns :—

Returns of Registration for 1868.

A.—Exhibits the Births in the 17 large towns during the year.
B.—Exhibits the Deaths in the same towns according to Race.
C.—Exhibits the Deaths from all causes according to Race.
D.—Exhibits the Deaths at various ages among the several Races.

5. The nomenclature of diseases adopted in the above returns is most arbitrary. When registration was first established a very simple list of well known causes of death was given as a guide. From year to year, save in Rangoon and a few other stations the original instructions have been departed from until *"de mal en pis"*—several of the returns are greatly complicated.

Original simple list of causes of deaths departed from.

6. Some of the figures in the several returns, as figures, may very possibly come near the truth, but for purposes of statistics greater care in the management of the registers is very necessary. Beyond the Birth and death rates, which they furnish, in some instances too favourable and in others the reverse, it is impossible to make very much out of them. In future Medical Officers and Registrars will be directed to confine themselves to a few well known causes of death, and to ensure strict adherence to these in recording the mortality, instructions with a list of diseases will be circulated from this Office for the guidance of all concerned.

Greater care necessary in collecting statistics.

7. Since writing the above paragraph I have received copies of the Sanitary Commissioner's, with the Government of India, series of forms for collecting the vital statis-

New list of diseases for Registration Returns recommended by Sanitary Commissioner with Government of India

tics of the general population &c. He has recommended the following list of diseases and injuries as the headings under which all deaths should be registered: viz:—

1. Cholera.
2. Small Pox.
3. Fevers.
4. Bowel complaints.
5. Suicide.
6. Wounding.
7. Accident.
8. Snake bite or killed by wild beasts.
9. All other causes.

These causes of death, given in this exceedingly simple list, are thoroughly understood by all classes, and as almost every Burman can read and write there will be no difficulty in recording the mortality under the correct headings. I shall adopt this list at once.

8. The total number of deaths recorded in the chief towns during the year 1868 was 7,895.

Total Deaths and Births in 1868.

The Births registered in the same period, were 9,300.

| | General Mortality. | | *Births* |
|---|---|---|---|
| 1. | Akyab | 547 | 721 |
| 2. | Kyouk Phyoo | 103 | 90 |
| 3. | Sandoway | 65 | 115 |
| 4. | Rangoon | 1,849 | 1,384 |
| 5. | Bassein | 556 | 939 |
| 6. | Myanoung | 150 | 234 |
| 7. | Henzadah | 550 | 1,012 |
| 8. | Kyangheen | 149 | 212 |
| 9. | Zaloon | 172 | 216 |
| 10. | Prome | 1,219 | 1,303 |
| 11. | Shwe Doung | 388 | 654 |
| 12. | Thayetmyo | 265 | 357 |
| 13. | Toungoo | 348 | 301 |
| 14. | Maulmain | 863 | 876 |
| 15. | Tavoy | 292 | 420 |
| 16. | Mergui | 227 | 353 |
| 17. | Shwe Gyeen | 152 | 113 |

9. A comparison of the present figures with those for former years is impossible. The Annual Vital Statistics of the Province have hitherto been tabulated for the official year, whereas the present returns are for the calendar year.

A comparison of returns with former years impossible.

10. The following tables show the total Births and Deaths according to sex, as registered in each of the seventeen towns in the three Divisions of British Burma during the year 1868.

Total Births and deaths according to sex.

BIRTHS.

| | Births. | Males. | Females. | Total. |
|---|---|---|---|---|
| Arakan. | Akyab ... ... ... ... ... | 394 | 327 | 721 |
| | Kyouk Phyoo ... ... ... ... | 57 | 33 | 90 |
| | Sandoway ... ... ... ... | 56 | 59 | 115 |
| | Total ... | 507 | 419 | 926 |
| | | Males. | Females. | Total. |
| Pegu. | Rangoon ... ... ... ... | 777 | 607 | 1,384 |
| | Bassein ... ... ... ... ... | 480 | 459 | 939 |
| | Myan Oung ... ... ... ... | 108 | 126 | 234 |
| | Henzadah ... ... ... ... | 539 | 473 | 1,012 |
| | Kyangheen ... ... ... ... | 109 | 103 | 212 |
| | Zaloon ... ... ... ... ... | 106 | 110 | 216 |
| | Prome ... ... ... ... ... | 667 | 636 | 1,303 |
| | Shwè Doung ... ... ... ... | 337 | 317 | 654 |
| | Thayetmyo ... ... ... ... | 202 | 155 | 357 |
| | Toungoo ... ... ... ... | 165 | 136 | 301 |
| | Total ... | 3,490 | 3,122 | 6,612 |
| | | Males. | Females. | Total. |
| Tenasserim. | Maulmain ... ... ... ... | 453 | 423 | 876 |
| | Tavoy ... ... ... ... ... | 220 | 200 | 420 |
| | Mergui ... ... ... ... ... | 201 | 152 | 353 |
| | Shwè Gyeen ... ... ... ... | 49 | 64 | 113 |
| | Total ... | 923 | 839 | 1,762 |
| | Grand Total ... | 4,920 | 4,380 | 9,300 |

## DEATHS.

| | Deaths | Males. | Females. | Total. |
|---|---|---|---|---|
| Arakan. | Akyab ... ... ... ... ... | 315 | 232 | 547 |
| | Kyouk Phyoo ... ... ... ... | 58 | 45 | 103 |
| | Sandoway ... ... ... ... | 40 | 25 | 65 |
| | Total ... | 413 | 302 | 715 |
| | | Males. | Females. | Total. |
| Pegu. | Rangoon ... ... ... ... | 1,087 | 762 | 1,849 |
| | Bassein ... ... ... ... ... | 316 | 240 | 556 |
| | Myan Oung ... ... ... ... | 84 | 66 | 150 |
| | Henzadah ... ... ... ... | 288 | 262 | 550 |
| | Kyangheen ... ... ... ... | 75 | 74 | 149 |
| | Zaloon ... ... ... ... ... | 81 | 91 | 172 |
| | Prome... ... ... ... ... | 644 | 575 | 1,219 |
| | Shwè Doung ... ... ... ... | 202 | 186 | 388 |
| | Thayetmyo ... ... ... ... | 140 | 125 | 265 |
| | Toungoo ... ... ... ... | 201 | 147 | 348 |
| | Total ... | 3,118 | 2,528 | 5,646 |
| | | Males. | Females. | Total. |
| Tenasserim. | Maulmain ... ... ... ... | 522 | 141 | 863 |
| | Tavoy .. ... ... ... ... | 157 | 135 | 292 |
| | Mergui ... ... ... ... ... | 124 | 103 | 227 |
| | Shwè Gyeon ... ... ... ... | 72 | 80 | 152 |
| | Total ... | 875 | 659 | 1,534 |
| | Grand Total ... | 4,406 | 3,489 | 7,895 |

11. The total Births in the three Divisions of the Province registered in the year was:—

Total Births in Divisions.

| | Males. | Females. |
|---|---|---|
| Arakan ..... ..... ..... | 507 | 419 |
| Pegu ..... ..... ..... | 3,490 | 3,122 |
| Tenasserim ... ..... ..... | 923 | 839 |
| Total..... | 4,920 | 4,380 |

12. The total Deaths in the same Divisions and for the same period was:—

Total Deaths in Divisions

| | Males. | Females. |
|---|---|---|
| Arakan ..... ..... ..... | 413 | 302 |
| Pegu ..... ..... ..... | 3,118 | 2,528 |
| Tenasserim ... ..... ..... | 875 | 659 |
| Total..... | 4,406 | 3,489 |

13. The increase therefore which has taken place in the population of the seventeen principal cities and towns by natural causes was 1,405; or, at a rate of 4.7 per mille. The following table illustrates the particulars of this increase, and at the same time, if the figures are correct, draws attention to the very unsatisfactory state of the health of the inhabitants in some of the localities.

Increase of Urban population.

| Towns. | Population. | Births. | Deaths | Increase. | Decrease. | Ratio of Births per 1,000. | Ratio of Deaths per 1,000. |
|---|---|---|---|---|---|---|---|
| Akyab ... | 15,743 | 721 | 547 | 174 | ... | 45.7 | 34.7 |
| Kyouk Phyoo ... | 3,690 | 90 | 103 | ... | 13 | 24.3 | 27.9 |
| Sandoway ... | 2,353 | 115 | 65 | 50 | ... | 48.8 | 27.6 |
| Rangoon ... | 72,695 | 1,384 | 1,849 | ... | 465 | 19. | 25.4 |
| Bassein ... | 18,530 | 939 | 556 | 383 | ... | 50.6 | 30. |
| Myan Oung ... | 5,829 | 234 | 150 | 84 | ... | 40.1 | 25.7 |
| Henzadah ... | 14,551 | 1,012 | 550 | 462 | ... | 69.5 | 37.7 |
| Kyangheen ... | 7,675 | 212 | 149 | 63 | ... | 27.6 | 19.4 |
| Zaloon ... | 2,989 | 216 | 172 | 44 | ... | 72.2 | 57.5 |
| Prome ... | 25,095 | 1,303 | 1,219 | 84 | ... | 51.9 | 48.5 |
| Shwè Doung ... | 9,945 | 654 | 388 | 266 | ... | 65.7 | 39. |
| Thayetmyo ... | 8,474 | 357 | 265 | 92 | ... | 42.1 | 31.2 |
| Toungoo ... | 11,588 | 301 | 348 | ... | 47 | 25.9 | 30. |
| Maulmain ... | 64,642 | 876 | 863 | 13 | ... | 13.5 | 13.3 |
| Tavoy ... | 14,518 | 420 | 292 | 128 | ... | 28.9 | 20.1 |
| Mergui ... | 9,535 | 353 | 227 | 126 | ... | 37. | 23.8 |
| Shwè Gyeen ... | 7,377 | 113 | 152 | ... | 39 | 15.3 | 20.6 |
| TOTAL... | 295,229 | 9,300 | 7,895 | 1,969 | 564 | 31.5 | 26.7 |

14. Taking the population as rendered in these returns we find the millesimal Birth and Death rates for the seventeen cities and towns to be as follows.

Millesimal Birth and Death rates.

| | | | |
|---|---|---|---|
| Births | ... | ... | 31.5 |
| Deaths | ... | ... | 26.7 |

15. In the absence of a census since 1861, and of any means of estimating the annual increment of inhabitants in the above towns, these figures have little value,

Annual increment of Urban populations not known.

We know that a very considerable increase has taken place to our population generally, by immigration from surrounding countries, and that a large part of the influx has settled down in our chief towns. From official returns from the interior, the rural augmentation can be readily calculated, but in towns no such authentic details are available and it is therefore next to impossible to compute Urban populations.

Ratio per 1000.

16. If a percentage of 3.5 births and 2.30 deaths; or, 35. and 23. per 1000 respectively are considered fair millesimal rates, the present returns exhibit a very unsatisfactory state of things. I cannot believe in the Birth rates for—

| | |
|---|---|
| AKYAB ..... | 45.7 |
| SANDOWAY ..... | 48.8 |
| BASSEIN ..... | 50.6 |
| MYAN-OUNG ..... | 40.1 |
| HENZADAH ..... | 69.5 |
| ZALOON ..... | 72.2 |
| PROME ..... | 51.9 |
| SHWE DOUNG ... | 65.7 |
| THAYETMYO ..... | 42.1 |

These figures are too favorable. They point to incorrect estimates of the total number of inhabitants in each town rather than to undue registration. Knowing the difficulty experienced in most countries all over the world, of ascertaining officially a true birth rate, I am decidedly of opinion that the annual increment to our Urban populations in certain positions, of which the above occupy a prominent place, has out-stripped our knowledge of the actual increase, and the high birth rate is to be accounted for by assuming the old census of ten years ago as a basis of calculation. Yet, if I admit this, and raise the populations to more correct estimates I make the death rate tell another tale more difficult of explanation: and, altho', where the deaths have increased they have been counterbalanced by additional births, above the average, in a large number of the towns, as the figures stand, I must discard them as unreliable. The rates given for—

| | |
|---|---|
| KYOUK PHYOO ... | 24.3 |
| RANGOON ..... | 19. |
| KYANGHEEN ..... | 27.6 |

| | | |
|---|---|---|
| TOUNGOO | ..... | 25.9 |
| MAULMAIN | ..... | 13.5 |
| SHWE-GYEEN | ..... | 15.3 |

High death rate in certain towns.

17. In the following towns the death rates are too high. They indicate the presence of Epidemics, Endemics, or some other unusual cause of unhealthiness. These points I intend to examine when I come to treat of each town separately.

| | | |
|---|---|---|
| AKYAB | ..... | 34.7 |
| BASSEIN | ..... | 30. |
| HENZADAH | ..... | 37.7 |
| ZALOON | ..... | 57.5 |
| PROME | ..... | 48.5 |
| SHWE DOUNG | ..... | 39. |
| THAYETMYO | ..... | 31.2 |
| TOUNGOO | ..... | 30. |

Kyangheen, 19.4 ; Maulmain, 13.3 ; Tavoy, 20.1 ; and Shwè Gyeen 20.6 are too satisfactory to be worthy of very much credit. The figures for Kyouk Phyoo 27.9 ; Sandoway 27.6; Rangoon, 25.4, and Mergui 23.8 may be approximately correct, but then their accuracy will not altogether bear testing.

Rangoon has a large floating population consisting of coolies generally single men, and the low birth rate may undoubtedly be affected by this; but that there are a large number of births which occur in the town and are not registered I believe to be equally true. Akyab is also a great labour market, but here the coolies do not remain all the year round. The birth rate in this station is 45.7, but no explanation has been given of the probable cause for so large an increase. In Rangoon so long as the sailor classes, coolies and boatmen predominate the birth rate will continue to remain below the average.

Causes of excess of mortality.

18. I shall now proceed to analyze as far as the returns will admit the causes of the excess of mortality in the seventeen towns separately; and, to facilitate my description, I subjoin a table showing the total deaths from the principal Zymotic diseases, and accidents, which have taken place in each. Before doing so however, I must mention that I have had opportunities of

personally examining in detail the Rangoon registers, which enable me to give much fuller particulars of our chief town than of any other.

| Names of Towns. | Fevers. | Cholera. | Small Pox. | Bowel complaints. | Suicide. | Wounding. | Accident. | Snake bite or killed by wild beasts. | All other diseases. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Akyab ..... | 218 | 1 | 2 | 55 | ..... | ..... | 15 | ..... | 256 | 547 |
| 2. Kyouk Phyoo. | 56 | ..... | ..... | 13 | ..... | ..... | ..... | ..... | 34 | 103 |
| 3. Sandoway ..... | 44 | ..... | ..... | 1 | ..... | ..... | ..... | ..... | 20 | 65 |
| 4. Rangoon..... | 785 | 7 | 102 | 69 | ..... | ..... | 17 | ..... | 869 | 1,849 |
| 5. Bassein..... | 104 | 18 | ..... | 64 | 3 | ..... | 5 | 2 | 360 | 556 |
| 6. Myanoung ..... | 41 | 3 | ..... | 33 | ..... | ..... | 3 | 1 | 69 | 150 |
| 7. Henzadah..... | 123 | 6 | 44 | 32 | ..... | ..... | 4 | ..... | 341 | 550 |
| 8. Kyan-gheen ... | 51 | 15 | ..... | 1 | ..... | ..... | 2 | ..... | 80 | 149 |
| 9. Zaloon..... | 42 | 33 | ..... | ..... | ..... | ..... | ..... | 1 | 96 | 172 |
| 10. Prome..... | 180 | 50 | 39 | 81 | ..... | 1 | 4 | 1 | 863 | 1,219 |
| 11. Shwè-doung ... | 53 | 10 | 1 | 32 | ..... | 5 | 2 | ..... | 285 | 388 |
| 12. Thayetmyo .... | 72 | ..... | 15 | 7 | ..... | 4 | 5 | 2 | 160 | 265 |
| 13. Toungoo..... | 86 | 27 | ..... | 46 | 3 | 3 | ..... | ..... | 183 | 348 |
| 14. Maulmain..... | 216 | 13 | 3 | 134 | 2 | 1 | 3 | ..... | 491 | 863 |
| 15. Tavoy..... | 120 | ..... | ..... | 77 | ..... | ..... | 1 | ..... | 94 | 292 |
| 16. Mergui..... | 93 | ..... | ..... | 33 | ..... | ..... | ..... | ..... | 161 | 227 |
| 17. Shwè-gyeen ... | 99 | ..... | ..... | 22 | ..... | 1 | ..... | ..... | 30 | 152 |
| Total.. ... | 2,383 | 183 | 206 | 700 | 8 | 15 | 61 | 7 | 4,332 | 7,895 |

This return exhibits the total mortality in the seventeen towns, as I have said from the most fatal diseases. I am sorry that I am unable to shew the monthly increase and decrease, annual returns only having been forwarded to my office.

Akyab town

19. No reports have been furnished from Akyab. Both the Magistrate and Civil Surgeon were relieved before notice could be given them that reports and returns were required for the Calendar year.

THE DEATH RATE WAS ...34.7 PER MILLE.
FEVER RATE ...13.8 do.
BOWEL COMPLAINTS ... 3.4 do.

One case of cholera is recorded, but the date is not given.

Fevers and bowel complaints caused more than half the total mortality. These two diseases distinctly point to defective drainage and water supply.

The rates of deaths under 5 years of age to total deaths was:—

| | |
|---|---|
| MALE | ... 4.3 per cent. |
| FEMALES | ... 4.0 do. |
| THE BIRTH RATE | ...45.7 |

Both this and the death rate are obviously untrustworthy.

20. KYOUK-PHYOO:—

| | |
|---|---|
| THE DEATH RATE WAS | ...27.9 per mille. |
| THE BIRTH RATE | ...24.3 do. |

These figures I cannot credit. The births are too low, while the deaths are too high, for a healthy town like this one is known to be. The registration cannot have been properly supervised.

Fevers and Bowel complaints caused $\frac{2}{3}$rds of the total mortality, the rates for each being:—

| | |
|---|---|
| FEVER | ... 1.5 per cent. |
| BOWEL COMPLAINTS | ... .3 do. |

The rate of deaths at 5 years and under to total deaths being:—

| | |
|---|---|
| MALES | ... 5.8 per cent. |
| FEMALES | ... 6.7 do. |

21. SANDOWAY:—

The death rate is set down at 27.6 per mille.
Do. births 48.8 Do.

Both these rates indicate that the census of the town has not been taken for a long time and that the annual increment to the population is not known.

The bulk of the mortality was caused by fevers, or 1.8 per cent of the total deaths.

The ratio of deaths at 5 years and under to total deaths is:—

| | | |
|---|---|---|
| MALES ... ... | 18.4 | per cent. |
| FEMALES ... ... | 10.7 | Do. |

22. RANGOON:—

Returns Nos. 1, 2, 3, 4, 5, 6, 7 and 8 are for the town of Rangoon only. The populations given for each quarter are not exact, although they are as nearly correct as the Police Office can furnish. In framing these returns I have adhered to the new forms recommended by the Sanitary Commissioner with the Government of India for the collection of vital statistics all over the country; and my object in presenting them here, independently of their intrinsic value, is to show that they can, so far as our towns are considered, be made up readily enough from existing registers. If these forms are retained and the orders of Government are issued in time, I hope to be able to submit all Statistical Returns for 1869 in accordance with them.

Returns Nos. 1, 2, 3, 4, to 8 are for the town of Rangoon only

| | | | |
|---|---|---|---|
| The Death rate is | ... | 25.4 | per mille. |
| The Birth ... | ... | 19. | Do. |
| Fever rate ... | ... | 10.7 | Do. |
| Cholera do ... | ... | .09 | Do. |
| Small Pox ... | ... | 1.3 | Do. |
| Bowel Complaints, &c. | ... | 9. | Do. |

Fever caused very nearly half the entire mortality.

Small Pox is endemic.

The population of Rangoon is set down at 72,695 and the mortality is returned at 1,849, or 25.4 per mille. This is not a very high death rate, when the numerous causes at work, in the unhealthy quarters, destroying life are remembered. A ratio of 19 births per 1,000 is absurd.

23. The two following returns set forth the chief mortality in three of the most unhealthy quarters of Rangoon, viz: Yambonquin, Botatoung and Poozoondoung, distributed monthly, according to sex and period of life; and ratios of deaths to strength and to total mortality. From these figures we learn that the excessive mortality was due to preventible diseases, which it is in our power to remove. The knowledge of this is a great gain. We see at once what healthful improvements are required and in which direction to apply them.

Return exhibiting the chief mortality in the Yambonquin Botatoung and Poozoondoung quarters.

| Quarters | Diseases. | Deaths in 1868. January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November | December. | Total. | Total Population. | Total Births. | Increase. | Decrease. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yambonquin. | Fevers ... ... ... | 7 | 7 | 11 | 7 | 8 | 4 | 23 | 9 | 9 | 11 | 3 | 8 | 107 | 8,639 | 176 | | 79 |
| | Measles ... ... | 10 | 6 | 2 | 1 | 1 | 2 | ... | ... | ... | ... | ... | 1 | 23 | | | | |
| | Cholera ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | | | | |
| | Small Pox ... ... | ... | ... | 2 | ... | 1 | 1 | 1 | ... | ... | ... | 1 | 4 | 10 | | | | |
| | Other Diseases ... | 7 | 5 | 5 | 5 | 9 | 13 | 16 | 13 | 12 | 9 | 10 | 11 | 115 | | | | |
| | Total ... | 24 | 18 | 20 | 13 | 19 | 20 | 40 | 22 | 21 | 20 | 14 | 24 | 255 | | | | |
| Botatoung. | Fevers ... ... ... | 9 | 6 | 6 | 7 | 4 | 1 | 12 | 10 | 11 | 9 | 6 | 4 | 85 | 3,273 | 109 | | 50 |
| | Measles ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | | | | |
| | Cholera ... ... ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | | | | |
| | Small Pox ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | | | | |
| | Other Diseases ... | 6 | 8 | 4 | 6 | 5 | 11 | 5 | 5 | 4 | 8 | 6 | 4 | 72 | | | | |
| | Total ... | 16 | 14 | 10 | 13 | 9 | 12 | 17 | 15 | 15 | 17 | 12 | 9 | 159 | | | | |
| Poozoondoung. | Fevers ... ... ... | 3 | 3 | 12 | 10 | 13 | 15 | 12 | 18 | 6 | 11 | 9 | 13 | 125 | 11,024 | 181 | | 275 |
| | Measles... ... ... | 4 | 4 | 8 | 8 | 2 | 4 | 2 | 1 | ... | 1 | ... | 1 | 35 | | | | |
| | Cholera... ... ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | 3 | | | | |
| | Smallpox ... ... | ... | ... | 1 | 4 | 5 | 2 | 2 | 3 | 1 | 2 | 5 | 6 | 31 | | | | |
| | Other diseases ... | 7 | 6 | 4 | 8 | 15 | 15 | 17 | 19 | 11 | 7 | 13 | 11 | 133 | | | | |
| | Total .. | 14 | 13 | 25 | 30 | 38 | 36 | 33 | 41 | 18 | 21 | 27 | 31 | 327 | 22,936 | 466 | | 275 |

The following Return exhibits the Deaths according to sex and period of life &c. &c;.

| Quarters. | Diseases. | Total Deaths. | Above 5 years. | | Under 5 years. | | Ratio of Deaths per 1,000. | Ratio of Deaths per cent to total Deaths. | Population. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Males. | Females. | Males. | Females. | | | |
| Yamboxquin. | Fevers | 107 | 62 | 22 | 12 | 11 | 12.3 | 41.9 | 8,639 |
| | Measles | 23 | 2 | 2 | 10 | 9 | 2.6 | 9.0 | |
| | Cholera | ..... | ..... | ..... | ..... | ..... | ..... | ..... | |
| | Small Pox | 10 | 1 | 1 | 4 | 4 | 1.1 | 3.9 | |
| | Other Diseases | 115 | 27 | 40 | 29 | 19 | 13.3 | 45.0 | |
| | Total | 255 | 92 | 65 | 55 | 43 | 29.3 | ..... | |
| Botatoung. | Fevers | 85 | 60 | 20 | 3 | 2 | 25.9 | 53.4 | 3,273 |
| | Measles | ..... | ..... | ..... | ..... | ..... | ..... | ..... | |
| | Cholera | 1 | 1 | ..... | ..... | ..... | 0.3 | 0.6 | |
| | Small Pox | 1 | ..... | ..... | 1 | ..... | 0.3 | 0.6 | |
| | Other Diseases | 72 | 9 | 26 | 25 | 12 | 21.9 | 45.2 | |
| | Total | 159 | 70 | 46 | 29 | 14 | 48.4 | ..... | |
| Poozoondoung. | Fevers | 125 | 85 | 21 | 7 | 12 | 11.3 | 38.2 | 11,024 |
| | Measles | 35 | 8 | 3 | 16 | 8 | 3.1 | 10.7 | |
| | Cholera | 3 | 3 | ..... | ..... | ..... | 0.2 | 0.9 | |
| | Small Pox | 31 | 10 | 4 | 10 | 7 | 2.8 | 9.4 | |
| | Other Diseases | 133 | 24 | 54 | 35 | 20 | 9.5 | 40·6 | |
| | Total | 327 | 330 | 82 | 68 | 47 | 29.5 | ..... | ..... |

Death rates in Yambonquin, Botatoung and Poozoondoung.

24. The death rate for the three quarters is 32·3 which is exceedingly high. The ratio of deaths per cent at 5 years of age and under to total deaths in the same localities, is 34.5; and in the proportion of the sexes of 100 males to 75 females. The populations of the three quarters decreased in the year by 275 persons. We have no very satisfactory means of determining the annual increment those positions receive by immigration, but from the figures in the returns it is apparent, that should their total strength and death rate continue as at present, the whole of the inhabitants would be removed in a space of 83 years, instead of probably doubling themselves by natural causes alone in the same period.

25. Returning now to form No. 1 for the town we find that the two quarters "Alongyua" and "Myatada"

have beeen equally unhealthy during the year with the three I have given in detail. Their insanitary conditions are the same, and in all, the bulk of the mortality has resulted from diseases of the Zymotic class. The high millessimal death rates from Fevers (which in my opinion are not of a purely malarious origin) measles, and small pox, notwithstanding the almost entire absence of cholera, are due to the preventible causes mentioned in the body of my health report; viz: low lying and swampy ground. bad water, worse conservancy and overcrowding.

Causes of the high millenary death rates in certain quarters.

The ratio of deaths at 5 years and under to total deaths in Rangoon, is :—

| | | | |
|---|---|---|---|
| MALES | ... | ... | 13.1 |
| FEMALES | ... | ... | 12.3 |

26. The deaths of 149 women are recorded under the head of "Child Birth", or 19.5 per cent of the total Female mortality. This is a very high death rate, and the Civil Surgeon suggests as a remedy the establishment of a Lying-in-Hospital, and the Magistrate proposes that, respectable native women should be taught midwifery. From my pen I am aware this Administration desires an expression of opinion on this vital question. I have had long experience of Burma, a doctor gets on anywhere with the natives and both duty and inclination have led me to a very free intercourse with the people of the country. I have invariably found that midwifery is not understood or scarcely understood by Burmese women who are the only admitted accoucheurs.

Deaths in child Birth.

Their women allowed freely to associate with males, have all the quickness and ready easiness which such an unrestrained state of society will naturally cause, but they have not advanced to that state of civilization where their medical men are professionally trained and would be placed confidence in, to overcome the diffidence of attendance by a male on such occasions. Burmese are a proud as well as a sensitive race. If a Lying-in-Hospital was opened it would be askancely looked upon—a suspicion would attach itself to the institution in their eyes as a provi-

sion only for unfortunates, and any women the very poorest would not approach it. Again they have strong home affections. They would rather die in bed in their own house without aid than be treated with the highest medical skill in a public Hospital. I speak of the people as I know them. Where a Lying-in-Hospital would I am sure be an almost useless institution to undertake, on the other hand, as I have said before, their females being of ready manner and intuitively inclined to progress, could easily be induced to learn. I have on more than one occasion incidentally entered into conversation with their practising midwives. The readiness with which they have seized upon suggestions made by me as to methods of treatment upon certain occasions, and there total absence of prejudice, makes me feel confident that the offer of tuition in this particular branch of medical science, would at once bring forward many pupils eager for learning, advanced both by their own interests and the wishes of the Burmese women generally, who are not feign to admit that their practice of accouchement is crude and barbarous when compared to what my descriptions to them have been of our advanced medical science. They are accurate of remark too—for I have had mentioned to me that our European women do not appear to suffer so much when confined, and that death during such times is rare, and of course I always stated that this was from our superior skill. The statement has always been readily accepted, and if tuition was once offered, I have no fear of the result of the number of applicants for learning. I need not say how great a good it would be to the people and with the means so readily at hand, I can confidently recommend the adoption of the plan proposed by Captain Strover the Magistrate of Rangoon.

Form No. 1 for town of Rang on apt to mislead.

27. The figures given in form No. 1 for the three unhealthy quarters of Rangoon, are apt to mislead. A few words of explanation are therefore necessary to a correct understanding of the same. The divisions of the town shewn in the returns are those which have been laid down for municipal and police purposes. They include therefore large areas which are not occupied. A return exhibiting the average population to space built over with houses would have at once pointed out the overcrowded situations. This I could

not cull from the records and I have had no opportunity of obtaining the measurements in time for this report.

Nature and extent of soil in unhealthy quarters.

28. The soil of these unhealthy quarters consists of pure river deposit, resting on a substratum of laterite. In extent it is several miles in length, whilst it varies in breadth from a few hundred yards at Kemendyne on the extreme west, to over a mile at Poozoondoung, the eastern boundary of the town.

I hardly know what to suggest to improve these unhealthy low lying quarters of Rangoon. The labor of raising them to a healthful level above high spring tides, would be enormous, and would cost millions of Rupees. The Department Public Works are however doing their utmost.

Bassein town

29. BASSEIN.—A census was taken of this town in October last; and within the Magistrate's boundary the population is set down at 18,530.

The birth rate is .....50.0 per mille.
The death rate is.....30. do.

The population was given last year at 16,079. The increase 2,451 is considered by the Deputy Commissioner to be the result of natural causes, while the Civil Surgeon is unable to account for it satisfactorily in this manner. The census in my opinion is defective. 3 per cent is too high a death rate, and a birth rate of 5 per cent is evidently too favourable.

The ratios of deaths from the following causes are:—

Fever.....5.7 per mille.
Cholera ..... .9 do.
Bowel complaints...3.4 do.

If the strength of the population of Bassein be raised to what I believe is a just average or about 23,000, the public health will be found to have been far from unsatisfactory. One great element, in calculating the census of this town, has I think been overlooked, viz: the floating population. A very considerable body of coolies also immigrated into this town during the rice season.

The age return shews a ratio of deaths at 5 years and under to total deaths of:—

| | | |
|---|---|---|
| MALES ..... | ..... | 6·8 per cent. |
| FEMALES ..... | ..... | 7·7 do. |

extensive drainage works are now under comtemplation for the improvement of this district, and I anticipate excellent results to the health of the inhabitants when they are completed. I have already alluded to this subject in my report.

30. MYANOUNG:—The Birth rate is 40.1. per mille.
The Death 25.7 ditto.

I have all along held that the population of this rising town is estimated too low, and these figures support this opinion.

| | | |
|---|---|---|
| The death rate from Fever is ..... | ..... | 7.0 per mille. |
| Cholera ..... ..... ..... ..... | ..... | ·5 ditto. |
| Bowel complaints ..... ..... | ..... | 5.7 ditto. |

The principal mortality was due to fever and bowel complaints. They caused together 49·3 per cent of the total deaths. The Sanitary condition of this town is given in my special Report to be found in the Appendix.

The ratio of deaths under 5 years of age is:—

| | | |
|---|---|---|
| MALES ... ..... ..... ..... | ..... | 7.0 per cent. |
| FEMALES... ..... ..... ..... | ..... | 7.3 ditto. |

31. HENZADAH:—This town is said to contain a popula- of 14,551 souls only, but I am satisfied that this estimate is very far from correct. At my visits judging from comparison, I have computed the stationary population to be at least 18,000. The floating population again is very large indeed. If we allow 9,000 for the regular boatmen, fishermen and others who are generally married, and who live in their boats or consider Henzadah their home, the rates on 27,000 would stand thus:—

Henzadah Town

| | | |
|---|---|---|
| Birth rate ..... ..... ..... | ..... | 37 per mille. |
| Death rate ..... ..... ..... | ..... | 20 ditto. |

These figures are certainly favourable, and I am inclined to think that they are not far out. Henzadah has always been a healthy town, and to my mind the registration is much nearer

accuracy than the 14,551 given as the actual strength of population.

The death rate from Fever on the old census is:—

| | | |
|---|---|---|
| | 8.4 | per mille |
| Cholera ... ... | 0.4 | ditto |
| Small Pox ... ... | 3.0 | ditto |
| Bowel Complaints ... | 2.1 | ditto |

I am inclined to credit the genuineness of the totals given in the return C for this town, although I am not prepared to accept the nomenclature of the causes of death. Moung Kyaw Doon, the Extra Asst. Commissioner not only displays a commendable spirit in the work of registration, but has done much good in explaining to the people the value of these statistics. He has personally taken very great pains to render me correct figures.

The ratio of deaths at 5 years and under to total deaths, is

| | | |
|---|---|---|
| MALES ... ... | 22.1 | per cent. |
| FEMALES ... ... | 21.0 | ditto |

32. KYANGHEEN :—

The birth rate is 27.6 per mille.
The death rate 19.4 do.

Altho' in good proportion to each other, these figures are unworthy of acceptance. Kyangheen is a healthy town and I know that considerable pains have been taken in collecting truthful statistics. The only way, therefore, to reconcile matters is to believe that the population has been over estimated.

The death rate from the principal diseases, is ;

| | | |
|---|---|---|
| Fever ... ... | 6.6 | per mille. |
| Cholera ... ... | 1.9 | do. |

The percentage of deaths to total deaths under 5 years of age is:—

| | | |
|---|---|---|
| MALES ... ... | 10.6 | per cent. |
| FEMALES ... ... | 9.3 | do. |

33. ZALOON:—

| | | |
|---|---|---|
| The birth rate is | 72.2 | per mille. |
| The death rate | 57.5 | do. |

These figures are of course absurd but to the want of a proper census the discrepancies must be ascribed.

| | | | |
|---|---|---|---|
| The death rate from fever, is : | | 14.0 | per mille. |
| Ditto | do. Cholera | 11.0 | do. |

33 persons are said to have died of Cholera, but no particulars are given. There is no Medical Officer at Zaloon, the statistics being entirely collected by native Officials. During last rains I visited Zaloon; the town was then flooded. This most probably was the cause of the outbreak of Cholera which occurred.

The ratio of deaths under 5 years of age to total deaths:

| | | | |
|---|---|---|---|
| MALES | .... | ... | 17.4 per cent. |
| FEMALES | ... | ... | 16.2 do. |

34. PROME :—

| | | | |
|---|---|---|---|
| The death rate is | | 48.5 | per mille. |
| The birth | do. | 51.9 | do. |
| Fever | do. | 7.1 | do. |
| Cholera | do. | 1.9 | do. |
| Small Pox | do. | 1.5 | do. |
| Bowel Complaints | | 3.2 | do. |

The diseases which caused the excess of mortality are preventible, and the sanitary works and appliances to remove them are now receiving attention. Prome is built in its greater part on the delta formed by the confluence of the Narweing creek and Irrawaddy river. It is surrounded on three sides by hills and by swamps on the fourth. Its natural position therefore is an unfortunate one, and the artificial measures required to overcome these obstacles to free ventilation and other equally hurtful insanitary conditions must necessarily be extensive, of a costly nature and take time in their execution. Such a work as the filling in of the old moat is of this description; and the work is I am happy to say progressing as rapidly as possible.

The rates of deaths under 5 years to total deaths, is

| | | | | |
|---|---|---|---|---|
| MALES | ... | ... | ... | 13.3 per cent. |
| FEMALES | ... | ... | ... | 12.7 ditto. |

35. SHWE-DOUNG :—The population of this town is stated to be 9,945.

| | | |
|---|---|---|
| The birth rate is... ... | 65.7 | per mille. |
| The death rate ... ... | 39.0 | ditto. |
| Fever ... ... | 5.3 | ditto. |
| Cholera ... ... | 1.0 | ditto. |
| Small Pox ... ... | 0.1 | ditto. |
| Bowel complaints ... | 3.2 | ditto. |

Shwè Doung is situated on the same side of the river as Prome (left bank) and at a distance of 9 miles only from it. Constant communication is kept up between the two towns, and epidemic and contagious diseases therefore, are easily spread from the one to the other and generally appear concurrently in both; but, the two communities suffer very differently. Shwè Doung once described as the "valley of the Shadow of Death" is now a healthy town. The Sanitary improvements effected by Colonel David Brown, the Deputy Commissioner have borne ample fruit.

The birth and death rates are high, and incredible. They indicate that the total strength of population, on which they have been calculated, is under-estimated. A correct census of our Urban population is very necessary.

The ratio of deaths at 5 years and under to total deaths, is:—

| | | |
|---|---|---|
| MALES ... ... | 10.8 | per cent. |
| FEMALES ... ... | 11.5 | do. |

36. THAYETMYO:—

The Birth rate is 42.1 per mille.
The death rate 31.2 do.

The number of the inhabitants in this town is entered in the returns at 8,474. Here again the census is either very much under-stated or some mistake has been made in the registration. It is impossible to believe in these figures.

The death rate from:—

| | | |
|---|---|---|
| Fever, is ... ... | 8.4 | per mille. |
| Small Pox ... ... | 1.7 | do. |
| Bowel Complaints ... | 0.8 | do. |

The ratio of deaths under 5 years of age to total deaths, is:—

| | | |
|---|---|---|
| MALES ... ... ... | 13.5 | per. cent. |
| FEMALES ... ... ... | 15.4 | do. |

37. TOUNGOO:-

The estimated population of this town was recorded last year as 9,648. This year it is given as 11,588.

| | | | |
|---|---|---|---|
| The birth rate, is | ... | 25.9 | per mille. |
| The death rate | ... | 30.0 | do. |

The figures are evidently very inaccurate. Dr. Parker in his last year's report stated that a Native Doctor had been appointed as registrar, and that he hoped " a more correct estimate may be arrived at from the current year's tables" this looked for improvement has not been realized, on the contrary the Native Doctor has made a worse mess of the registration than ever. The population has increased by 1,940 persons during the year, and I presume by immigration, for by natural causes, as given in the returns, it shews a decrease of 47 in number.

| | | | | |
|---|---|---|---|---|
| The death rate from Fever, is | | ... | 7.4 | per mille. |
| Do. | Cholera | ... | 2.3 | do. |
| Do. | Bowel Complaints | ... | 3.9 | do. |

These three diseases together caused about one half of the mortality. They are certainly preventible diseases. I have already submitted a special sanitary report on this station, and in it I have stated the sanitary changes, which seem to me desirable.

I hope in future that the vital statistics in the town of Toungoo will be collected with greater care.

Maulmain town

38. MAULMAIN:—Last year in calculating the strength of the population the troops were included. This year they have been very properly omitted. The actual number of inhabitants is now placed as 64,642, or 858 less than last year. I discredit this return.

| | | | | | |
|---|---|---|---|---|---|
| The death rate, is | ... | ... | ... | ... | 13.3 |
| The birth rate | ... | ... | ... | ... | 13.5 |

These rates are manifestly too low. The year was unusually healthy and Maulmain is undoubtedly a healthy place, but who can believe in a death rate in British Burma, or anywhere else in the East, of only 13.3 per *mille*. I am quite prepared to admit however, that the foreign coolies in Maulmain are single men, and that the foreign native women, to a large extent, lead the lives of prostitutes; but what are the

numbers of these classes. Allowing a very wide margin I question if they reach a total strength of 5,000. The remaining foreigners have settled down and are generally "double men," that is, they keep women if not actually married. I can quite understand also, that the birth rate in this town would not, as its community is now composed, reach a high figure, but this would not effect the death rate to the extent represented. Again, if Dr. Suffrein's views are accepted, how are we to reconcile the very opposite rates given for Rangoon, as far as the deaths are concerned, Akyab and Bassein, all of which are similarly influenced by foreign coolie populations; Rangoon and Akyab being the most important labour markets in the whole country.

| | POPULATION. | BIRTH RATE | DEATH RATE. | |
|---|---|---|---|---|
| RANGOON | 72,695 | 19.0 | 25.4 | per mille. |
| AKYAB | 15,743 | 45.7 | 34.7 | ditto. |
| BASSEIN | 18,530 | 50.6 | 30.0 | ditto. |
| MAULMAIN | 64,642 | 13.5 | 13.3 | ditto. |

There are said to be, composing the population in Maulmain 43,805 males and 20,837 females; or, in the proportion of a little over two males to one female, which is palpably erroneous. From this alone I fear that the registration has not been sufficiently supervised.

The death rate from Fever is ..... 3.3 per mille.
Cholera ..... ..... ..... ..... 0.2 ditto.
Small Pox ..... ..... ..... ..... 0.04 ditto.
Bowel complaints ..... ..... ..... 2.0 ditto.

Fever caused the bulk of the mortality, or 25.0 per cent of the total deaths.

The ratio of deaths at 5 years and under to total deaths, is:—

MALES ... ..... ..... ..... ..... 4.6 per cent.
FEMALES ..... ..... ..... ..... 3.8 ditto.

Dr. Suffrein remarks "this return (D) presents nothing calling for special remarks with the exception that the mortality of children between the ages of 1 and 5 years, is very high, the cause being doubtless, the mis-management of children, I have already alluded to, as being prevalent with Burmese mothers."

39. TAVOY:—

The birth rate is..... ..... 28.9
The death rate ..... ..... 20.1

These figures are too low. Sufficient attention has evidently not been paid to registration.

The death rate from fever is... ..... 8.2 per mille.
Bowel complaints ..... ..... ..... 5.3 ditto.

The bulk of mortality was caused by fever. Bowel complaints and fever are the chief diseases met with in this town.

The ratio of deaths under 5 years of age to total deaths, is:

MALES... ..... ..... ..... ..... 11.6 per cent.
FEMALES ..... ..... ..... ..... 6.8 ditto.

40. MERGUI:—

The birth rate is..... ..... 37.0
The death rate..... ..... 23.8

these figures I think may be accepted as fairly correct.

Here, as at Henzadah, the personal interest taken in the collection of vital statistics, and the constant supervision exercised over registers by the district officer himself, has resulted in the submission of satisfactory returns. I particularly observe that Captain Shepherd the Deputy Commissioner has adhered to the original simple list of the "causes of death," which was circulated for the guidance of all officers, when the instructions for Urban registration were first issued. To this I must attribute much of the success which has attended Captain Shepherd's labours.

The ratio of deaths :—

From Fever is ... 9.7 per mille
Bowel Complaints ... 3.4 do.

These two diseases caused more than half the mortality, or 55.0 per cent. The ratio of deaths under 5 years of age to total deaths, is:—

MALES ... ... 6.1 per cent.
FEMALES ... ... 8.3 do.

41. SHWE-GHEEN :—

The birth rate is ... ... 15.3 per mille
The death do. ... ... 20.6 do.

This town was very healthy during the year. The Deputy Commissioner Captain Watson and Mr. Cooper the Civil Surgeon are indefatigable in their efforts to keep the town clean and healthy. I cannot however accept the above figures as accurate representations of the true state of things. The births cannot possibly have been correctly registered, the death rate is too low, ... ... 20.6 per mille

Fever rate ... 12.0 do.
Bowel Complaints 2.9 do.

These two diseases caused the bulk of the mortality, or four-fifths of the total deaths.

The deaths under 5 years of age to total deaths, is—

Males ... ... 5.2 per cent
Females ... ... 7.2 do.

13 Towns exhibit an increase in Births over Deaths.

42. Returning now to the four general Annual Returns for the whole 17 towns, A, B, C, & D, we find that, there has been an increase of births in 13 of those towns, while 4 show a falling off, especially Rangoon, which heads the list with no less a number than 465. I have pointed out however, that these figures cannot altogether be relied upon, as we do not know the correct number of inhabitants living in each town. The estimated strength of the population in each town, save Moulmein, Zaloon, Shwè-doung and Shwè-Gheen, as entered in the returns, show also an increase, but how this has been obtained is nowhere stated, with the exception of Bassein where a census was attempted last October: I would suggest that during this year a correct numbering of the people in all registration towns be made. The census in each town should be limited to the magistrate's boundary, but must not include Cantonments.

Total population of the 17 towns.

43. The total population of the seventeen towns, is 295,229.

The birth rate ... ... 31.5 per mille
The death rate ... ... 26.3 do.

These figures, altho' in my opinion, for reasons already stated, far from reliable may be considered satisfactory.

Female births in excess of males.

The female births were in excess of the males in four towns only, namely, Sandoway, Myan-oung, Zaloon and Shwè-Gheen,

The proportion of children born in the seventeen towns according to sexes, is as follows.

100 males to 88 females.

Proportion of deaths of sexes in 17 towns.

44. The proportion of deaths of the sexes in the several populations we find to be :—

| | MALES. | FEMALES. | RATIO. |
|---|---|---|---|
| AKYAB | 315 | 232 | 100 to 73 |
| KYOUK PHYOO, | 58 | 45 | 100 to 77 |
| SANDOWAY, | 40 | 25 | 100 to 62 |
| RANGOON, | 1,087 | 762 | 100 to 70 |
| BASSEIN, | 316 | 240 | 100 to 75 |
| MYAN OUNG, | 84 | 66 | 100 to 78 |
| HENZADAH, | 288 | 262 | 100 to 90 |
| KYANGHEEN, | 75 | 74 | 100 to 98 |
| ZALOON, | 81 | 91 | 100 to 112 |
| PROME, | 644 | 575 | 100 to 89 |
| SHWE DOUNG, | 202 | 186 | 100 to 92 |
| THYETMYO, | 140 | 125 | 100 to 89 |
| TOUNGOO, | 201 | 147 | 100 to 73 |
| MAULMAIN, | 522 | 341 | 100 to 65 |
| TAVOY, | 157 | 135 | 100 to 85 |
| MERGUI, | 124 | 103 | 100 to 83 |
| SHWE-GHEEN, | 72 | 80 | 100 to 111 |

Return C

45. The return C. shews the deaths from all causes during the year. The death rates from the principal diseases are :—

| | | |
|---|---|---|
| Fever ... ... ... | 8.0 | per mille. |
| Cholera ... ... ... | 0.6 | ditto. |
| Small Pox ... ... ... | 0.6 | ditto. |
| Bowel Complaints... ... | 2.3 | ditto. |

These together caused 43.9 per cent of the total deaths ; and they may all be said to be preventible diseases, Small Pox pre-eminently so.

The deaths from fevers were 2,383: It is at the commencement and termination of the South-West Monsoon that they prevail to the greatest extent. To lessen the mortality from this cause, the chief remedies are, deep drainage dipping well into the sub-soil, ventilation and good potable water in abundance. In towns where these sanitary principles are attended to, we notice that fevers at once decline in severity and fatality.

Cholera reported epidemic in Mandalay in July 1868.

46. In July Cholera was reported to be epidemic in Mandalay the capital of Burma Proper, and subsequently a few cases appeared in the chief towns on our lines of commercial traffic, but no where did it spread.

The ratio per *mille* of population of each city in which the disease was registered, is as follows:—

| | | |
|---|---|---|
| AKYAB ... ... ... | .06 | per mille. |
| RANGOON ... ... ... | .09 | do. |
| BASSEIN ... ... ... | .9 | do. |
| MYANOUNG ... ... ... | .5 | do. |
| HENZADAH ... ... ... | .4 | do. |
| KYANGHEEN... ... ... | 1.9 | do. |
| ZALOON ... ... ... | 11.0 | do. |
| PROME ... ... ... | 1.9 | do. |
| SHWE DOUNG ... ... | 1.0 | do. |
| TOUNGOO ... ... ... | 2.3 | do. |
| MAULMAIN ... ... ... | ·2 | do. |

The dates of outbreak and disappearance of the disease in each district and town have not yet reached me. To obtain facts in connection with the appearance of first cases is most difficult.

Small Pox was spread over 7 towns. It was most severe in the months of March, April, and May; while it almost entirely disappeared in September.

The percentage of deaths from this disease, is :—

| | | |
|---|---|---|
| AKYAB ... ... ... | .01 | per cent. |
| RANGOON ... ... ... | .1 | do. |
| HENZADAH ... ... ... | .3 | do. |
| PROME ... ... ... | .1 | do. |
| SHWE DOUNG ... ... | .01 | do. |
| THAYETMYO ... ... ... | .1 | do. |
| MAULMAIN ... ... ... | .004 | do. |

About 3 per cent of the adult inhabitants in British Burma are totally unprotected, and I take my data from personal observations among the people themselves, and that collected from our prison population, the remainder are inoculated. All children under 5 years of age are also unprotected and it is among these that the greatest mortality occurs. An opportunity here arises of doing much good, and a properly constituted Vaccination Department would have a fair field for its operation, and would considerably tend to alleviate the present amount of suffering.

Venereal diseases.

47. Venereal diseases destroyed 35 persons; 33 males and 2 females. These figures do not of course give the slightest idea of the extent of the curse in our towns—70 persons, for instance, died of Rheumatism; 90 per cent probably being Syphilitic: again, 11 persons committed suicide, and Burmese usually poison themselves when suffering from severe venereal affections. I hope the Contagious Diseases Act will soon be extended to all our large towns, inland as well as those on the seaboard.

Tetanus

48. 52 Infants died of Tetanus. This disease is, in my opinion, the result of overcrowding and bad ventilation. It is undoubtedly a preventible disease.

Deaths in childbed in the 17 towns.

49. The deaths in child-bed registered in the 17 towns during the year, were, 196; or, a ratio of 5.6 per cent to total deaths among females. These figures can be accepted as approximately true.

Children born dead.

50. The children born dead were 275; or a ratio of 17.4 per cent on total deaths under 5 years of age.

According to the sexes, they were as follows:—

| | | |
|---|---|---|
| Males ... ... ... | 9.8 | per cent. |
| Females ... ... ... | 7.5 | do. |

and, in the proportion of:—

100 Males to 76 Females.

Return D

51. The return D is perhaps not entitled to much credit. The deaths however at 5 years and under, are given, to total deaths as follows:—

| | | |
|---|---|---|
| Males ... ... ... | 10.2 | per cent. |
| Females ... ... ... | 9.7 | do. |

The people are not prejudiced against registration.

52. Our system of registration has now been under trial for four years. The people of the country are not prejudiced against it and I have every reason to hope that, when the new forms are issued, with greater care in the collection of the vital statistics, satisfactory returns may be looked for.

NOTE:—The data given in this report have been taken from the general forms A and B for the whole 17 towns of the Province. C and D cannot be made to tally with B, the forwarding officers having submitted their returns incorrectly. I have therefore computed the totals as well as the figures will admit.

*ANNUAL FORM No. I.—Deaths Registered in the different Quarters of Rangoon during the year 1868.*

| 1 | 2 | 3 | 4 | | | 5 | 6 | 7 | | | 8 | | | 9 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Area in statute Acres. | Average population per statute Acre. | Number of Deaths Registered. | | | Ratio of Deaths per 1,000 of the Population. | | | Mean Ratio of Deaths per 1,000 during previous 5 years. | | |
| | | | M. | F. | Total. | | | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1 | Rangoon. | Kemendyne ... ..... | 6,027 | 7,973 | 14,000 | 186 | 75 | 205 | 128 | 333 | 34.01 | 16.05 | 23. 7 | | No record kept. | |
| 2 | | Alongyua ..... ..... | 1,203 | 1,307 | 2,510 | 179 | 14 | 37 | 41 | 78 | 30.75 | 31.36 | 31. 0 | | | |
| 3 | | Tarokdan ..... ..... | 4,114 | 1,911 | 6,025 | 80 | 75 | 100 | 44 | 144 | 24.30 | 23.02 | 23. 8 | | | |
| 4 | | Pabaidan ..... ..... | 3,545 | 955 | 4,500 | 100 | 45 | 37 | 39 | 76 | 10.43 | 41.83 | 16. 8 | | | |
| 5 | | Kyouktada..... ..... | 3,477 | 543 | 4,020 | 19½ | 103 | 76 | 42 | 118 | 21.85 | 77·34 | 29. 3 | | | |
| 6 | | Pansodan ..... ..... | 3,738 | 4,141 | 7,879 | 160 | 49 | 36 | 30 | 66 | 9.62 | 7.24 | 8. 3 | | | |
| 7 | | Mengala ..... ..... | 731 | 774 | 1,505 | 39½ | 19 | 20 | 18 | 38 | 27.35 | 23.25 | 25.24 | | | |
| 8 | | Botatoung ..... ..... | 1,536 | 1,737 | 3,273 | 39½ | 41 | 102 | 60 | 162 | 66.40 | 34.54 | 49. 4 | | | |
| 9 | | Poozoondoung ..... | 5,527 | 5,497 | 11,024 | 1,200 | 9 | 200 | 127 | 327 | 36.18 | 23.10 | 29. 6 | | | |
| 10 | | Yambonquin ... ..... | 4,208 | 4,431 | 8,639 | 100 | 86 | 151 | 107 | 258 | 35.88 | 24.14 | 29. 8 | | | |
| 11 | | Myatada ..... ..... | 2,173 | 2,827 | 5,000 | 100 | 50 | 69 | 88 | 157 | 31.75 | 31.12 | 31. 4 | | | |
| 12 | | Dalla ... ..... ..... | 2,145 | 2,175 | 4,320 | 70 | 61 | 54 | 38 | 92 | 25.17 | 17.47 | 21. 2 | | | |
| | | Total..... | 38,424 | 34,271 | 72,695 | 2,273½ | 627 | 1,087 | 762 | 1,849 | 28.28 | 22.43 | 25.43 | | | |

RANGOON
31st August 1868.

A. J. COWIE,
*Sanitary Commissioner,*
*British Burma.*

*ANNUAL FORM No. II.— Deaths registered in the different Quarters of Rangoon, during each MONTH of the year* 1868.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Janry. | | | Feby. | | | March | | | April | | | May | | | June | | | July | | | August | | | Septr. | | | October | | | Novr. | | | Decr. | | | TOTAL. | | |
| | | | M. | F. | Total | M | F | T. | M | F | T. | M | F | T. | M | F | T. | M | F | T. | M | F | T. | M. | F | T. | M. | F | T. | M | F | T. | M | F | T. | M | F | T. | M | F | T. | M. | F | Total |
| 1 | RANGOON. | Kemendyne .... | 6,027 | 7,973 | 14,000 | 16 | 16 | 32 | 13 | 11 | 24 | 21 | 7 | 28 | 18 | 11 | 29 | 21 | 14 | 35 | 25 | 11 | 36 | 22 | 9 | 31 | 16 | 11 | 33 | 16 | 8 | 24 | 12 | 11 | 23 | 13 | 7 | 20 | 12 | 6 | 18 | 205 | 128 | 333 |
| 2 | | Alongyua .... | 1,203 | 1,307 | 2,510 | 3 | 4 | 7 | 1 | 5 | 6 | 0 | 7 | 7 | 0 | 1 | 1 | 1 | 1 | 2 | 3 | 7 | 10 | 5 | 2 | 7 | 5 | 1 | 7 | 4 | 2 | 6 | 8 | 3 | 11 | 4 | 4 | 8 | 3 | 3 | 6 | 37 | 41 | 78 |
| 3 | | Tarokdan .... | 4,114 | 1,911 | 6,025 | 5 | 4 | 9 | 6 | 3 | 9 | 9 | 4 | 13 | 13 | 6 | 19 | 9 | 5 | 14 | 8 | 2 | 10 | 7 | 5 | 12 | 11 | 1 | 12 | 6 | 3 | 9 | 6 | 3 | 9 | 10 | 5 | 15 | 10 | 3 | 13 | 100 | 44 | 144 |
| 4 | | Pabaidan .... | 3,545 | 955 | 4,500 | 6 | 6 | 12 | 3 | 4 | 7 | 2 | 5 | 7 | 1 | 4 | 5 | 4 | 3 | 7 | 3 | 1 | 4 | 6 | 2 | 8 | 3 | 1 | 5 | 4 | 5 | 9 | 3 | 3 | 6 | 2 | 0 | 2 | 0 | 4 | 4 | 37 | 39 | 76 |
| 5 | | Kyouktada .... | 3,477 | 543 | 4,020 | 11 | 8 | 19 | 10 | 5 | 15 | 8 | 4 | 12 | 4 | 3 | 7 | 3 | 5 | 8 | 5 | 5 | 10 | 3 | 2 | 5 | 8 | 1 | 10 | 4 | 3 | 7 | 4 | 0 | 4 | 7 | 4 | 11 | 9 | 1 | 10 | 76 | 42 | 118 |
| 6 | | Pansodan .... | 3,738 | 4,141 | 7,879 | 4 | 4 | 8 | 3 | 1 | 4 | 3 | 2 | 5 | 4 | 1 | 5 | 1 | 4 | 6 | 0 | 3 | 3 | 3 | 1 | 4 | 1 | 4 | 5 | 2 | 3 | 5 | 6 | 2 | 8 | 6 | 2 | 8 | 2 | 3 | 5 | 36 | 30 | 66 |
| 7 | | Mengala .... | 731 | 774 | 1,505 | 3 | 1 | 4 | 1 | 1 | 1 | 1 | 2 | 4 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 1 | 1 | 2 | 2 | 4 | 4 | 1 | 6 | 0 | 2 | 2 | 2 | 3 | 5 | 1 | 1 | 2 | 2 | 1 | 3 | 20 | 18 | 38 |
| 8 | | Botatoung .... | 1,536 | 1,737 | 3,273 | 11 | 5 | 16 | 7 | 5 | 12 | 6 | 4 | 10 | 8 | 5 | 13 | 4 | 5 | 9 | 6 | 6 | 12 | 12 | 6 | 18 | 8 | 7 | 15 | 13 | 4 | 17 | 13 | 4 | 17 | 5 | 7 | 11 | 9 | 2 | 11 | 102 | 60 | 162 |
| 9 | | Poozoondoung .. | 5,527 | 5,497 | 11,024 | 8 | 6 | 14 | 8 | 5 | 13 | 15 | 10 | 15 | 19 | 10 | 29 | 25 | 16 | 41 | 23 | 12 | 35 | 21 | 11 | 32 | 14 | 17 | 41 | 8 | 10 | 18 | 15 | 7 | 11 | 18 | 8 | 26 | 16 | 15 | 31 | 200 | 127 | 327 |
| 10 | | Yambonquin ... .. | 4.208 | 4,431 | 8,639 | 16 | 8 | 24 | 9 | 9 | 18 | 10 | 10 | 10 | 8 | 5 | 13 | 7 | 11 | 18 | 11 | 9 | 20 | 27 | 13 | 40 | 17 | 6 | 23 | 12 | 9 | 11 | 15 | 5 | 20 | 7 | 8 | 15 | 12 | 14 | 26 | 151 | 107 | 258 |
| 11 | | Myatada ..... | 2,173 | 2,827 | 5,000 | 9 | 6 | 15 | 3 | 11 | 14 | 3 | 9 | 11 | 7 | 8 | 15 | 10 | 9 | 19 | 5 | 12 | 17 | 4 | 12 | 16 | 1 | 5 | 7 | 7 | 5 | 11 | 10 | 5 | 15 | 3 | 5 | 8 | 6 | 1 | 7 | 69 | 88 | 157 |
| 12 | | Dalla . | 2,145 | 1,175 | 4,320 | 7 | 8 | 15 | 7 | 3 | 10 | 9 | 2 | 11 | 2 | 2 | 4 | 4 | 3 | 7 | 3 | 4 | 7 | 5 | 6 | 11 | 6 | 5 | 11 | 1 | 2 | 3 | 5 | 0 | 5 | 3 | 1 | 4 | 2 | 2 | 4 | 54 | 38 | 92 |
| | | Total .. | 38,424 | 34,271 | 72,695 | 99 | 76 | 175 | 71 | 63 | 134 | 88 | 66 | 154 | 84 | 56 | 140 | 93 | 78 | 171 | 92 | 73 | 165 | 117 | 71 | 188 | 105 | 70 | 175 | 77 | 56 | 133 | 90 | 46 | 145 | 79 | 52 | 131 | 83 | 55 | 138 | 1,087 | 762 | 1,849 |

RANGOON,
31st August 1869

J. A. COWIE,
*Sanitary Commissioner,*
*British Burma.*

*ANNUAL FORM No. III.—Deaths registered from different Causes in the different Quarters of Rangoon during the year 1868.*

| 1 | 2 | 3 | 4 | | | 5 | | | 6 | | | 7 | | | 8 | | | 9 | | | | | | | | | | | | 10 | | | 11 | | | 12 | | | | | | | | | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | Injuries. | | | | | | | | | | | | | | | | | | Ratio of Deaths per 1,000 of population. | | | | | | | | |
| No. | Town. | Names of Quarters. | Population. | | | Cholera | | | Small Pox. | | | Fevers. | | | Bowel Complaints. | | | Suicide. | | | Wounding. | | | Accident. | | | Snake bite or killed by wild Beasts. | | | All other Causes. | | | Total Deaths from all Causes. | | | Cholera. | Small Pox. | Fever. | Bowel Complaints. | Injuries. | From all Causes. | | | No. |
| | | | M. | F. | Total. | M | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | | | | | | M. | F. | T. | |
| 1 | RANGOON. | Kemendyne... | 6,027 | 7,973 | 14,000 | 1 | .. | 1 | 1 | .. | 1 | 104 | 51 | 155 | 2 | 5 | 7 | 1 | .. | 1 | .. | .. | .. | 1 | .. | 1 | 2 | .. | 2 | 93 | 72 | 165 | 205 | 128 | 333 | .07 | .07 | 11.07 | . 5 | .28 | 34.0 | 16.0 | 23.7 | 1 |
| 2 | | Alongyua .. | 1,203 | 1,307 | 2,510 | .. | .. | .. | 4 | 3 | 7 | 13 | 12 | 25 | 2 | 3 | 5 | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 17 | 23 | 40 | 37 | 41 | 78 | ... | 2.78 | 9.96 | 1.99 | .39 | 30.7 | 31.3 | 31.0 | 2 |
| 3 | | Tarokdan .. | 4,114 | 1,911 | 6,025 | .. | .. | .. | 6 | 1 | 7 | 68 | 13 | 81 | 4 | 2 | 6 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 22 | 28 | 50 | 100 | 44 | 144 | ... | 1.16 | 13.44 | .99 | ... | 24.3 | 23.0 | 23.8 | 3 |
| 4 | | Pabaidan .. | 3,545 | 955 | 4,500 | .. | .. | .. | 1 | 4 | 5 | 18 | 11 | 29 | 3 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 15 | 24 | 39 | 37 | 39 | 76 | ... | 1.11 | 6.44 | .66 | ... | 10.4 | 41.8 | 16.8 | 4 |
| 5 | | Kyouktada .. | 3,477 | 543 | 4,020 | .. | .. | .. | 10 | 5 | 15 | 43 | 11 | 54 | 6 | 3 | 9 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 16 | 22 | 38 | 76 | 42 | 118 | ... | 3.73 | 13.43 | 2.23 | .47 | 21.8 | 77.3 | 29.3 | 5 |
| 6 | | Pansodan .. | 3,738 | 4,141 | 7,879 | 1 | .. | 1 | 4 | 5 | 9 | 21 | 6 | 27 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 10 | 19 | 29 | 36 | 30 | 66 | .12 | 1.14 | 3.42 | ... | ... | 9.6 | 7.2 | 8.3 | 6 |
| 7 | | Mengala .. | 731 | 774 | 1,505 | 1 | .. | 1 | 1 | 3 | 4 | 4 | 5 | 9 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 14 | 10 | 24 | 20 | 18 | 38 | .66 | 2.65 | 5.98 | ... | ... | 27.3 | 23.2 | 25.2 | 7 |
| 8 | | Botatoung . | 1,536 | 1,737 | 3,273 | 1 | .. | 1 | 1 | .. | 1 | 62 | 23 | 85 | 3 | 1 | 4 | .. | 1 | 1 | .. | .. | .. | 1 | .. | 1 | 1 | 1 | 2 | 32 | 34 | 66 | 102 | 60 | 162 | .30 | .30 | 25.96 | 1.22 | 1.22 | 66.4 | 34.5 | 49.4 | 8 |
| 9 | | Poozoondoung | 5,527 | 5,497 | 11,024 | 3 | .. | 3 | 20 | 11 | 31 | 90 | 35 | 125 | 8 | 2 | 10 | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 77 | 79 | 156 | 200 | 127 | 327 | .27 | 2.81 | 11.33 | .90 | .18 | 36.1 | 23.1 | 29.6 | 9 |
| 10 | | Yanbonquin. | 4,208 | 4,431 | 8.639 | .. | .. | .. | 5 | 5 | 10 | 77 | 30 | 107 | 8 | 8 | 16 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | 1 | 59 | 64 | 123 | 151 | 107 | 258 | ... | 1.15 | 12.38 | 1.85 | .23 | 35.8 | 24.1 | 29.8 | 10 |
| 11 | | Myatada .. | 2,173 | 2,827 | 5,000 | .. | .. | .. | 5 | 5 | 10 | 37 | 16 | 53 | 1 | 3 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 26 | 64 | 90 | 69 | 88 | 157 | ... | 2. 0 | 10.60 | . 8 | ... | 31.7 | 31.1 | 31.4 | 11 |
| 12 | | Dalla .. | 2,145 | 2,175 | 4,320 | .. | .. | .. | .. | 2 | 2 | 21 | 14 | 35 | 4 | 1 | 5 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 29 | 20 | 49 | 54 | 38 | 92 | ... | .46 | 8.10 | 1.13 | .22 | 25.1 | 17.4 | 21.2 | 12 |
| | | Total.. | 38,424 | 34,271 | 72,695 | 7 | .. | 7 | 58 | 44 | 102 | 558 | 227 | 785 | 41 | 28 | 69 | 3 | 2 | 5 | .. | .. | .. | 3 | .. | 3 | 6 | 2 | 8 | 410 | 459 | 869 | 1,087 | 762 | 1,849 | .09 | 1. 4 | 10. 7 | .94 | . 2 | 28.8 | 22.4 | 25.4 | |

RANGOON,
31st August 1869.

A. J. COWIE,
*Sanitary Commissioner,*
*British Burma.*

*ANNUAL FORM No. IV.—Deaths Registered according to AGE in the different Quarters of Rangoon during the year 1868.*

| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town | Names of Quarters | Born Dead | | | Under 1 year | | | 1 to 5 | | | 6 to 15 | | | 16 to 25 | | | 26 to 35 | | | 36 to 45 | | | 46 to 60 | | | Over 60 | | | Grand Total | | |
| | | | M | F. | T. | M | F. | T. | M. | F. | T. | M. | F. | T. | M | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M | F. | T |
| 1 | | Kemendyne | 1 | | 1 | 30 | 8 | 38 | 54 | 41 | 95 | 20 | 8 | 28 | 20 | 12 | 32 | 21 | 12 | 33 | 15 | 5 | 30 | 30 | 20 | 50 | 14 | 12 | 26 | 205 | 128 | 333 |
| 2 | | Alongyua | 1 | | 1 | 12 | 8 | 20 | 6 | 16 | 22 | 4 | 3 | 7 | 2 | 5 | 7 | 5 | 1 | 6 | 1 | 3 | 4 | 5 | 4 | 9 | 1 | 1 | 2 | 37 | 41 | 78 |
| 3 | | Tarokdan | | | | 12 | 10 | 22 | 12 | 4 | 16 | 8 | 4 | 12 | 17 | 5 | 22 | 15 | 3 | 18 | 14 | 3 | 17 | 15 | 8 | 23 | 7 | 7 | 14 | 100 | 44 | 144 |
| 4 | | Pabaudan | 1 | | 1 | 4 | 4 | 8 | 3 | 8 | 11 | 2 | 2 | 4 | 3 | 5 | 8 | 10 | 9 | 19 | 3 | 1 | 4 | 7 | 3 | 10 | 4 | 7 | 11 | 37 | 39 | 76 |
| 5 | | Kyouktada | | | | 9 | 3 | 12 | 8 | 9 | 17 | 7 | 2 | 9 | 15 | 9 | 24 | 14 | 8 | 22 | 7 | 4 | 11 | 12 | 6 | 18 | 4 | 1 | 5 | 76 | 42 | 118 |
| 6 | | Pansodan | | | | 6 | 1 | 7 | 4 | 7 | 11 | 1 | 1 | 2 | 5 | 4 | 9 | 3 | 3 | 6 | 7 | 5 | 12 | 6 | 4 | 10 | 4 | 5 | 9 | 36 | 30 | 66 |
| 7 | | Mengala | | | | 4 | 1 | 5 | 4 | 3 | 7 | 2 | | 2 | | 1 | 1 | 3 | 5 | 8 | 2 | 3 | 5 | 5 | 2 | 7 | | 3 | 3 | 20 | 18 | 38 |
| 8 | Rangoon | Botatoung | 2 | | 2 | 14 | 8 | 22 | 19 | 7 | 26 | 7 | 6 | 13 | 16 | 14 | 30 | 19 | 8 | 27 | 15 | 2 | 17 | 6 | 3 | 9 | 4 | 12 | 16 | 102 | 60 | 162 |
| 9 | | Poozoondoung | | | | 29 | 19 | 48 | 43 | 34 | 77 | 21 | 19 | 40 | 26 | 5 | 31 | 34 | 13 | 47 | 18 | 8 | 26 | 15 | 9 | 24 | 14 | 20 | 34 | 200 | 127 | 327 |
| 10 | | Yambonquin | | 1 | 1 | 32 | 11 | 43 | 27 | 30 | 57 | 14 | 12 | 26 | 18 | 8 | 26 | 19 | 10 | 29 | 7 | 8 | 15 | 16 | 10 | 26 | 18 | 17 | 35 | 151 | 107 | 258 |
| 11 | | Myatada | 1 | | 1 | 10 | 7 | 17 | 10 | 19 | 29 | 4 | 12 | 16 | 14 | 8 | 22 | 12 | 18 | 30 | 6 | 6 | 12 | 5 | 6 | 11 | 7 | 12 | 19 | 69 | 88 | 157 |
| 12 | | Dalla | | 1 | 1 | 9 | 3 | 12 | 12 | 8 | 20 | 4 | 9 | 13 | 8 | 2 | 10 | 7 | 3 | 10 | 5 | 1 | 6 | 3 | 5 | 8 | 6 | 6 | 12 | 54 | 38 | 92 |
| | | TOTAL | 6 | 2 | 8 | 171 | 83 | 254 | 202 | 186 | 388 | 94 | 78 | 172 | 144 | 78 | 222 | 162 | 93 | 255 | 100 | 59 | 159 | 125 | 80 | 205 | 83 | 103 | 186 | 1087 | 762 | 1849 |

Rangoon
31st August 1869.

A. J. COWIE,
*Sanitary Commissioner, British Burma.*

ANNUAL FORM No. V.—*Deaths registered from CHOLERA in the different Quarters of Rangoon during each month of the year* 1868.

| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May | | |
| | | | Male. | Female | Total | M. | F | T. | M. | F. | T | M. | F. | T. | M. | F. | T. | M | F | T |
| 1 | Rangoon. | Kemendine ... ... ... | 6,027 | 7,973 | 14,000 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 2 | | Alongyua ... ... ... ... | 1,203 | 1,307 | 2,510 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 3 | | Tarokdan ... ... ... ... | 4,114 | 1,911 | 6,025 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 4 | | Pabaidan ... ... ... ... | 3,545 | 955 | 4,500 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 5 | | Kyouktada ... ... ... | 3,477 | 543 | 4,020 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 6 | | Pansodan ... ... ... ... | 3,738 | 4,141 | 7,879 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7 | | Mengala ... ... ... ... | 731 | 774 | 1,505 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 8 | | Botatoung ... ... ... | 1,536 | 1,737 | 3,273 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 9 | | Poozoondoung ... ... ... | 5,527 | 5,497 | 11,024 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |
| 10 | | Yambonquin ... ... ... | 4,208 | 4,431 | 8,639 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 11 | | Myatada ... ... ... ... | 2,173 | 2,827 | 5,000 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 12 | | Dalla ... ... ... ... | 2,145 | 2,175 | 4,320 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | | Total ... | 38,424 | 34,271 | 72,195 | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 |

*Annual Form No. V.---Continued*

| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | 5 | | | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | June. | | | July | | | August. | | | Septr. | | | Octr. | | | Novr. | | | Decr. | | | Total. | | | No. |
| | | | M | F. | T. | M. | F. | T. | M. | F. | T. | M | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T | |
| 1 | Rangoon. | Kemendine. ... ... ... | | | | | | | | | | | | | | | | | | | | | | 1 | ... | 1 | |
| 2 | | Alongyua ... ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | Tarokdan ... ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | Pabaidan ... ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | Kyouktada ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | Pansodan ... ... ... ... | | | | | | | | | | | | | | | | | | | 1 | ... | 1 | 1 | ... | 1 | |
| 7 | | Mengala ... ... ... ... | | | | | | | | | | | | | 1 | ... | 1 | | | | | | | 1 | ... | 1 | |
| 8 | | Botatoung ... ... ... | | | | | | | | | | | | | | | | | | | | | | 1 | ... | 1 | |
| 9 | | Poozoondoung ... ... ... | | | | | | | | | | | | | | | | | | | | | | 3 | ... | 3 | |
| 10 | | Yambonquin ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | Myatada ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | Dalla ... ... ... ... | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Total ... | | | | | | | | | | | | | 1 | ... | 1 | | | | 1 | ... | 1 | 7 | ... | 7 | |

RANGOON,
1st August, 1869

A. J. COWIE,
*Sanitary Commissioner B. B*

ANNUAL FORM No. VI.—*Deaths registered from* SMALL POX *in the different Quarters of Rangoon during each month of the year* 1868.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | January. | | | February. | | | March. | | | April. | | | May. | | | June. | | |
| | | | M. | F. | Total. | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T |
| 1 | RANGOON. | Kemendyne | 6,027 | 7,973 | 14,000 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 2 | | Alongyua | 1,203 | 1,307 | 2,510 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 3 | | Tarokdan | 4,114 | 1,911 | 6,025 | ... | ... | ... | ... | ... | ... | 2 | ... | 2 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... |
| 4 | | Pabaidan | 3,545 | 955 | 4,500 | 1 | ... | 1 | ... | 1 | 1 | ... | 1 | 1 | ... | 1 | 1 | ... | 1 | 1 | ... | ... | ... |
| 5 | | Kyouktada | 3,477 | 543 | 4,020 | 1 | ... | 1 | 3 | 1 | 4 | 5 | 3 | 8 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... |
| 6 | | Pansodan | 3,738 | 4,141 | 7,879 | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 2 | 1 | ... | 1 | ... | 1 | 1 | ... | 2 | 2 |
| 7 | | Mengala | 731 | 774 | 1,505 | 1 | ... | 1 | ... | 1 | 1 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 8 | | Botatoung | 1,536 | 1,737 | 3,273 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 9 | | Poozoondoung | 5,527 | 5,497 | 11,024 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 4 | 2 | 6 | 3 | 2 | 5 | ... | ... | ... |
| 10 | | Yambonquin | 4,208 | 4,431 | 8,639 | ... | ... | ... | ... | ... | ... | ... | 2 | 2 | ... | ... | ... | ... | 2 | 2 | 1 | ... | 1 |
| 11 | | Myatada | 2,173 | 2,827 | 5,000 | ... | ... | ... | ... | 2 | 2 | ... | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 2 | ... | ... | ... |
| 12 | | Dalla | 2,145 | 2,175 | 4,320 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 | ... | ... | ... | ... | ... | ... |
| | | Total | 38,424 | 34,271 | 72,695 | 4 | ... | 4 | 3 | 6 | 9 | 10 | 9 | 19 | 9 | 8 | 17 | 4 | 7 | 11 | 1 | 2 | 3 |

*Annual Form No. VI.—(Continued).*

| 1 | 2 | 3 | 5 | | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | July. | | | August | | | September. | | | October. | | | November. | | | December. | | | Total. | | | No. |
| | | | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | |
| 1 | RANGOON. | Kemendyne | | | | | | | | | | | | | | | | | | | 1 | | 1 | |
| 2 | | Alongyua | | | | | | | | | | 5 | 1 | 6 | | 1 | 1 | 1 | 1 | 2 | 6 | 3 | 9 | |
| 3 | | Tarokdan | | | | | | | | | | | | | 2 | | 2 | 1 | | 1 | 6 | 1 | 7 | |
| 4 | | Pabaidan | | | | | | | | | | | | | | | | | | | 1 | 4 | 5 | |
| 5 | | Kyouktada | | | | | | | | | | | | | | | | | | | 10 | 5 | 15 | |
| 6 | | Pansodan | 2 | | 2 | | | | | | | | | | | | | | | | 4 | 5 | 9 | |
| 7 | | Mengala | | | | | | | | | | | 1 | 1 | | | | | | | 1 | 3 | 4 | |
| 8 | | Botatoung | | | | | | | | | | | | | | | | | | | 1 | | 1 | |
| 9 | | Poozoondoung | 1 | | 1 | 2 | 1 | 3 | | 1 | 1 | 1 | 1 | 2 | 4 | 3 | 7 | 4 | 1 | 5 | 20 | 11 | 31 | |
| 10 | | Yambonquin | 1 | | 1 | | | | | | | | | | 1 | | 1 | 2 | 1 | 3 | 5 | 5 | 10 | |
| 11 | | Myatada | | | | | | | | | | | | | | | | | | | 3 | 5 | 8 | |
| 12 | | Dalla | | | | | | | | | | | | | | | | | | | | 2 | 2 | |
| | | Total | 4 | | 4 | 2 | 1 | 3 | | 1 | 1 | 6 | 3 | 9 | 7 | 4 | 11 | 8 | 3 | 11 | 58 | 44 | 102 | |

Rangoon, 31st August 1869.

A. J. COWIE, *Sanitary Commissioner, B. B*

*ANNUAL FORM No. VII.—Deaths registered from FEVERS in the different Quarters of Rangoon during each month of the year* 1868.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | January. | | | February. | | | March. | | | April. | | | May. | | | June | | |
| | | | Males. | Female. | Total. | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T |
| 1 | RANGOON. | Kemendyne ... ... | 6,027 | 7,973 | 14,000 | 3 | 6 | 9 | 6 | 2 | 8 | 7 | ... | 7 | 6 | 6 | 12 | 13 | 6 | 19 | 8 | 4 | 12 |
| 2 | | Alongyua ... ... ... | 1,203 | 1,307 | 2,510 | 3 | 2 | 5 | 1 | 2 | 3 | .. | 3 | 3 | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 2 |
| 3 | | Tarokdan ... ... ... | 4,114 | 1,911 | 6,025 | 1 | 1 | 2 | 5 | 1 | 6 | 8 | ... | 8 | 9 | 2 | 11 | 4 | 3 | 7 | 7 | 1 | 8 |
| 4 | | Pabaidan ... ... ... | 3,545 | 955 | 4,500 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 1 | 2 | ... | ... | ... | 1 | 1 | 2 | 3 | 1 | 4 |
| 5 | | Kyouktada ... ... ... | 3,477 | 543 | 4,020 | 5 | 2 | 7 | 6 | 1 | 7 | 2 | ... | 2 | 1 | 1 | 2 | 4 | 1 | 5 | 4 | 1 | 5 |
| 6 | | Pansodan ... ... ... | 3,738 | 4,141 | 7,879 | ... | ... | ... | 1 | ... | 1 | 1 | ... | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... |
| 7 | | Mengala ... ... ... | 731 | 774 | 1,505 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 | ... | ... | ... |
| 8 | | Botatoung ... ... ... | 1,536 | 1,737 | 3,273 | 4 | 5 | 9 | 4 | 2 | 6 | 3 | 3 | 6 | 6 | 1 | 7 | 2 | 2 | 4 | 1 | ... | 1 |
| 9 | | Poozoondoung ... ... | 5,527 | 5,497 | 11,024 | 3 | ... | 3 | 2 | 1 | 3 | 9 | 3 | 12 | 7 | 3 | 10 | 9 | 4 | 13 | 9 | 6 | 15 |
| 10 | | Yambonquin ... ... | 4,208 | 4,431 | 8,639 | 5 | 2 | 7 | 5 | 2 | 7 | 6 | 5 | 11 | 6 | 1 | 7 | 6 | 2 | 8 | 3 | 1 | 4 |
| 11 | | Myatada ... ... ... | 2,173 | 2,827 | 5,000 | 5 | ... | 5 | 1 | 4 | 5 | 2 | ... | 2 | 6 | 3 | 9 | 4 | 1 | 5 | 1 | ... | 1 |
| 12 | | Dalla ... ... ... ... | 2,145 | 2,175 | 4,320 | 2 | 3 | 5 | 3 | 1 | 4 | 2 | ... | 2 | 2 | ... | 2 | 1 | ... | 1 | 2 | 2 | 4 |
| | | Total ... | 38,424 | 34,271 | 72,695 | 32 | 23 | 55 | 35 | 17 | 52 | 41 | 15 | 56 | 43 | 17 | 60 | 46 | 23 | 69 | 39 | 17 | 56 |

*ANNUAL FORM No. VII.—Continued.*

| 1 | 2 | 3 | 5 | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | July. | | | August. | | | September. | | | October. | | | November. | | | December. | | | Total. | | | No. |
| | | | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | |
| 1 | RANGOON. | Kemendyne... ... ... | 12 | 8 | 20 | 13 | 9 | 22 | 10 | 4 | 14 | 5 | 3 | 8 | 9 | 3 | 12 | 12 | ... | 12 | 104 | 11 | 155 | |
| 2 | | Alongyua ... ... ... | 1 | ... | 5 | 3 | ... | 3 | 2 | 1 | 3 | 1 | 2 | 3 | ... | ... | ... | 1 | ... | 1 | 13 | 12 | 25 | |
| 3 | | Tarokdan ... ... ... | 4 | 1 | 6 | 10 | 1 | 11 | 3 | 1 | 4 | 5 | ... | 5 | 8 | 2 | 10 | 4 | ... | 4 | 68 | 13 | 81 | |
| 4 | | Pabaidan ... ... ... | 4 | n | 4 | 2 | ... | 2 | 3 | 3 | 6 | 1 | ... | 1 | 1 | ... | 1 | ... | ... | ... | 18 | 11 | 29 | |
| 5 | | Kyouktada ... ... ... | 2 | n | 1 | 7 | 1 | 8 | 2 | ... | 2 | 1 | ... | 1 | 5 | 2 | 7 | 4 | ... | 4 | 43 | 11 | 54 | |
| 6 | | Pansodan ... ... ... | 1 | ... | 1 | 6 | 1 | 7 | ... | 1 | 1 | 7 | ... | 7 | 3 | 2 | 5 | 1 | 2 | 3 | 21 | 6 | 27 | |
| 7 | | Mengala ... ... ... | 1 | n | 3 | 1 | 1 | 2 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 4 | 5 | 9 | |
| 8 | | Botatoung ... ... ... | 10 | n | 12 | 6 | 4 | 10 | 10 | 1 | 11 | 8 | 1 | 9 | 4 | 2 | 6 | 4 | ... | 4 | 62 | 23 | 85 | |
| 9 | | Poozoondoung ... ... | 10 | n | 12 | 10 | 8 | 18 | 5 | 1 | 6 | 0 | 1 | 11 | 7 | 2 | 9 | 9 | 4 | 13 | 90 | 35 | 125 | |
| 10 | | Yambonquin ... ... | 17 | 6 | 23 | 6 | 3 | 9 | 6 | 3 | 9 | 00 | 1 | 11 | 3 | 1 | 3 | 5 | 3 | 8 | 77 | 30 | 107 | |
| 11 | | Myatada ... ... ... | 1 | ... | 1 | 3 | 2 | 5 | 3 | 1 | 4 | 5 | ... | 5 | 3 | 4 | 7 | 3 | 1 | 4 | 37 | 16 | 53 | |
| 12 | | Dalla ... ... ... ... | 3 | 4 | 7 | 3 | 4 | 7 | 1 | ... | 1 | ... | ... | ... | 2 | ... | 2 | ... | ... | ... | 21 | 14 | 35 | |
| | | Total ... | 66 | 29 | 95 | 70 | 34 | 104 | 45 | 16 | 61 | 54 | 8 | 62 | 44 | 18 | 62 | 43 | 10 | 53 | 558 | 227 | 785 | |

RANGOON,
31st August. 1868.

A. J. COWIE,
*Sanitary Commissioner,*
*British Burma.*

ANNUAL FORM No. VIII.—*Deaths registered from* BOWEL COMPLAINTS *in the several Quarters of Rangoon during each month of the year* 1868.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | January. | | | February. | | | March. | | | April. | | | May. | | | June. | | |
| | | | M | F | Total | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T |
| 1 | RANGOON. | Kemendyne | 6,027 | 7,973 | 14,000 | ... | ... | ... | 2 | ... | 2 | ... | 2 | 2 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... |
| 2 | | Alongyua | 1,203 | 1,307 | 2,510 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| 3 | | Tarokdan | 4,114 | 1,911 | 6,025 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 1 | ... | 1 | ... | ... | ... | 1 | ... | 1 |
| 4 | | Pabaidan | 3,545 | 955 | 4,500 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 5 | | Kyouktada | 3,477 | 543 | 4,020 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 |
| 6 | | Pansodan | 3,738 | 4,141 | 7,879 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7 | | Mengala | 731 | 774 | 1,505 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 8 | | Botatoung | 1,536 | 1,737 | 3,273 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 |
| 6 | | Poozoondoung | 5,527 | 5,497 | 11,024 | 1 | ... | 1 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 1 | 3 |
| 10 | | Yambonquin | 4,208 | 4,431 | 8,639 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | 2 | ... | 2 | 1 | 1 | 2 |
| 11 | | Myatada | 2,173 | 2,827 | 5,000 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | 1 | ... | 1 | 1 |
| 12 | | Dalla | 2,145 | 2,175 | 4,320 | 1 | ... | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... |
| | | Total | 38,424 | 34,271 | 72,695 | 4 | 1 | 5 | 3 | 1 | 4 | 3 | 3 | 6 | 2 | 1 | 3 | 2 | 3 | 5 | 6 | 6 | 12 |

*ANNUAL FORM No. VIII.—(Continued).*

| 1 | 2 | 3 | 5 | | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | July. | | | August. | | | September. | | | October. | | | November. | | | December. | | | Total. | | | No. |
| | | | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | M | F | T | |
| 1 | RANGOON. | Kemendyne | | | | | | | | | | | 2 | 2 | | | | | | | 2 | 5 | 7 | |
| 2 | | Alongyua | | 2 | 2 | 1 | | 1 | | | | | | | | | | | | | 2 | 3 | 5 | |
| 3 | | Tarokdan | | | | | | | 1 | | 1 | | | | | 1 | 1 | | 1 | 1 | 4 | 2 | 6 | |
| 4 | | Pabaidan | | | | | | | | | | 2 | | 2 | | | | | | | 3 | | 3 | |
| 5 | | Kyouktada | | | | | | | 1 | 1 | 2 | 1 | | 1 | 2 | | 2 | 2 | | 2 | 6 | 3 | 9 | |
| 6 | | Pansodan | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | Mengala | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | Botatoung | | | | 1 | | 1 | | 1 | 1 | | | | | | | | | | 3 | 1 | 4 | |
| 9 | | Poozoondoung | 2 | | 2 | 1 | | 1 | | | | | | | 1 | | 1 | | | | 8 | 2 | 10 | |
| 10 | | Yambonquin | | | | 1 | 1 | 2 | 1 | 1 | 2 | | 1 | 1 | | | | 1 | 2 | 3 | 8 | 8 | 16 | |
| 11 | | Myatada | | | | | | | 1 | | 1 | | | | | | | | | | 1 | 3 | 4 | |
| 12 | | Dalla | | | | | | | | | | 2 | | 2 | | | | | | | 4 | 1 | 5 | |
| | | Total | 2 | 2 | 4 | 4 | 1 | 5 | 4 | 3 | 7 | 5 | 3 | 8 | 3 | 1 | 4 | 3 | 3 | 6 | 41 | 28 | 69 | |

RANGOON,
31st August 1869.

A. J. COWIE,
*Sanitary Commissioner, British Burma.*

## Form. A.

*REGISTRATION Return of Births in the Province of British Burma for the year ending 31st December 1868. Population 295,229.*

| Months. | Sex. | Races. | | | | | | | Total Males and Females. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese. | Arakanese. | Karens. | Shans. | Chinese. | Natives of India. | Other Races. | | |
| January 1868... | Males. | 322 | 35 | ... | 3 | 7 | 21 | 28 | 416 | |
| | Females. | 300 | 22 | ... | 2 | 5 | 22 | 15 | 366 | |
| February " ... | Males. | 305 | 29 | ... | 3 | 12 | 23 | 20 | 392 | |
| | Females. | 302 | 22 | 2 | 1 | 8 | 22 | 16 | 373 | |
| March " ... | Males. | 297 | 30 | 1 | 1 | 9 | 18 | 13 | 369 | |
| | Females | 289 | 19 | 1 | 3 | 10 | 13 | 18 | 353 | |
| April " ... | Males. | 325 | 26 | ... | 4 | 10 | 12 | 18 | 395 | |
| | Females. | 286 | 20 | ... | 4 | 7 | 18 | 16 | 351 | |
| May " ... | Males. | 325 | 23 | 1 | 1 | 11 | 24 | 22 | 407 | |
| | Females. | 294 | 20 | 1 | 1 | 8 | 21 | 21 | 366 | |
| June " ... | Males. | 326 | 24 | ... | ... | 9 | 17 | 24 | 400 | |
| | Females. | 292 | 26 | ... | 3 | 5 | 13 | 22 | 361 | |
| July " ... | Males. | 342 | 38 | 2 | 2 | 15 | 17 | 18 | 434 | |
| | Females. | 261 | 22 | ... | 1 | 3 | 14 | 12 | 313 | |
| August " ... | Males. | 326 | 32 | ... | 1 | 3 | 27 | 24 | 413 | |
| | Females. | 275 | 25 | 1 | 3 | 2 | 19 | 12 | 337 | |
| Sepetmbet .... | Males. | 342 | 45 | ... | 1 | 15 | 20 | 23 | 446 | |
| | Females. | 313 | 32 | ... | 3 | 18 | 19 | 13 | 398 | |
| October " ... | Males. | 329 | 39 | ... | 3 | 7 | 20 | 14 | 412 | |
| | Females. | 306 | 35 | ... | 3 | 9 | 19 | 24 | 396 | |
| November " ... | Males. | 327 | 28 | 1 | ... | 7 | 23 | 12 | 398 | |
| | Females. | 320 | 27 | ... | 1 | 9 | 9 | 19 | 385 | |
| December " ... | Males. | 358 | 27 | 1 | 5 | 7 | 19 | 21 | 438 | |
| | Females. | 309 | 21 | ... | 1 | 13 | 20 | 17 | 381 | |

RANGOON,
*31st August* 1869.

A. J. COWIE,
*Sanitary Commissioner,*
*British Burma.*

## Form B.

*REGISTRATION Return of Deaths in the Province of British Burma, for the year ending* 31*st December* 1868. *Population* 295,229.

| Months. | Sex. | Races. | | | | | | | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese. | Arakanese. | Karens. | Shans. | Chinese. | Natives of India. | Other Races. | | |
| January 1868 ... | Males. | 290 | 24 | 1 | 3 | 5 | 41 | 22 | 386 | |
| | Females. | 219 | 19 | " | 1 | 2 | 12 | 7 | 260 | |
| February " ... | Males. | 199 | 17 | " | 3 | 9 | 22 | 17 | 267 | |
| | Females. | 202 | 12 | " | 2 | 2 | 14 | 18 | 250 | |
| March " ... | Males. | 303 | 20 | " | 5 | 5 | 18 | 17 | 368 | |
| | Females. | 241 | 12 | " | 3 | " | 7 | 14 | 273 | |
| April " ... | Males. | 265 | 13 | " | 5 | 8 | 32 | 23 | 346 | |
| | Females. | 216 | 17 | " | 3 | 4 | 9 | 13 | 262 | |
| May " ... | Males. | 286 | 19 | 2 | 6 | 13 | 35 | 20 | 379 | |
| | Females. | 216 | 16 | " | 2 | 3 | 14 | 22 | 283 | |
| June " ... | Males. | 258 | 13 | " | 5 | 15 | 20 | 23 | 334 | |
| | Females. | 255 | 13 | " | 6 | 5 | 8 | 22 | 305 | |
| July " ... | Males. | 322 | 32 | 1 | 3 | 18 | 18 | 26 | 420 | |
| | Females. | 272 | 17 | " | 4 | 2 | 11 | 17 | 323 | |
| August " ... | Males. | 285 | 34 | " | 8 | 12 | 32 | 19 | 390 | |
| | Females. | 290 | 26 | " | 1 | 5 | 11 | 26 | 359 | |
| September " ... | Males. | 276 | 20 | " | 6 | 11 | 38 | 13 | 364 | |
| | Females. | 238 | 20 | " | 3 | 2 | 8 | 13 | 284 | |
| October " .... | Males. | 259 | 32 | 1 | 2 | 8 | 47 | 16 | 364 | |
| | Females. | 238 | 17 | " | 3 | 1 | 7 | 10 | 276 | |
| November " ... | Males. | 320 | 19 | " | 1 | 10 | 34 | 22 | 406 | |
| | Females. | 242 | 19 | " | 2 | 1 | 13 | 10 | 287 | |
| December " ... | Males. | 280 | 21 | 2 | 8 | 7 | 38 | 26 | 382 | |
| | Females. | 273 | 16 | " | 2 | 2 | 18 | 16 | 327 | |

RANGOON,
31st August, 1869.

A. J. COWIE,
*Sanitary Commissioner,*
*British Burma.*

## Form C

*REGISTRATION Return showing the supposed or ascertained causes of Deaths among the several Races in the Province of British Burma, during the year ending 31st December 1868. Population 295,229 souls.*

| Nature of Disease. | Burmese. | | | Arakanese. | | | Karens. | | | Shans. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. |
| Fever | 971 | 657 | 1,628 | 122 | 90 | 212 | 5 | 1 | 6 | 31 | 11 | 42 |
| Cholera | 99 | 66 | 165 | | | | | | | 3 | 1 | 4 |
| Small Pox | 94 | 75 | 169 | 1 | | 1 | 1 | | 1 | | | |
| Measles | 159 | 150 | 309 | 1 | | 1 | | | | | | |
| Dysentery | 153 | 118 | 271 | 16 | 7 | 23 | 2 | | 2 | 1 | 4 | 5 |
| Diarrhœa | 122 | 72 | 194 | 12 | 4 | 16 | | 1 | 1 | 7 | 1 | 8 |
| Convulsion | 219 | 157 | 376 | 3 | 2 | 5 | | | | 9 | 4 | 13 |
| Disease of Chest and Lungs | 9 | 8 | 17 | | | | | | | | | |
| Child Birth | | 149 | 149 | | 16 | 16 | | | | | 1 | 1 |
| Still Born | 128 | 95 | 223 | 7 | 4 | 11 | | | | 2 | 2 | 4 |
| Old age | 193 | 260 | 453 | 13 | 20 | 33 | | 2 | 2 | 4 | 1 | 5 |
| Accident | 10 | 2 | 12 | 1 | 1 | 2 | | | | 2 | | 2 |
| Other Causes | 949 | 1,033 | 1,982 | 89 | 57 | 146 | 4 | | 4 | 14 | 7 | 21 |
| Total | 3,106 | 2,842 | 5,948 | 265 | 201 | 466 | 12 | 4 | 16 | 73 | 32 | 105 |

## Form C.—*(Continued).*

| Nature of Disease. | Chinese. | | | Natives of India. | | | Other Races. | | | Total. | | | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total | Males. | Females. | Total. | Males. | Females. | Total. | |
| Fever | 74 | 12 | 86 | 211 | 54 | 265 | 73 | 64 | 137 | 1,487 | 889 | 2,376 | |
| Cholera | 5 | ..... | 5 | 11 | 1 | 12 | 5 | ..... | 5 | 123 | 68 | 191 | |
| Small Pox | ..... | ..... | ..... | 9 | 5 | 14 | 10 | 7 | 17 | 115 | 87 | 202 | |
| Measles | 2 | 1 | 3 | 3 | 6 | 9 | 24 | 8 | 32 | 189 | 165 | 354 | |
| Dysentery | 9 | 4 | 13 | 37 | 11 | 48 | 11 | 7 | 18 | 229 | 151 | 380 | |
| Diarrhœa | 12 | 4 | 16 | 61 | 3 | 64 | 4 | ..... | 4 | 218 | 85 | 303 | |
| Convulsion | 6 | 1 | 7 | 15 | 6 | 21 | 24 | 16 | 40 | 276 | 186 | 462 | |
| Disease of Chest and Lungs | ..... | ..... | ..... | 1 | 1 | 2 | 1 | 2 | 3 | 11 | 11 | 22 | |
| Child Birth | ..... | ..... | ..... | ..... | 18 | 18 | ..... | 11 | 11 | ..... | 195 | 195 | |
| Still Born | 3 | 4 | 7 | 7 | 10 | 17 | 9 | 5 | 14 | 156 | 120 | 276 | |
| Old age | 10 | 2 | 12 | 26 | 17 | 43 | 9 | 23 | 32 | 255 | 325 | 580 | |
| Accident | 2 | ..... | 2 | 7 | ..... | 7 | 3 | ..... | 3 | 25 | 3 | 28 | |
| Other Causes | 21 | 6 | 27 | 170 | 54 | 224 | 71 | 43 | 114 | 1,318 | 1,200 | 2,518 | |
| Total | 144 | 34 | 178 | 558 | 186 | 744 | 244 | 186 | 430 | 4,402 | 3,485 | 7,887 | |

RANGOON,
31st August 1869.

A. J. COWIE,
*Sanitary Commissioner, British Burma.*

**Form**

*REGISTRATION Return showing the Deaths at various ages among*
*ending* 31*st December* 1868.

| AGES. | Burmese. | | | Arakanese. | | | Karens. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. |
| Still Born ... ... | 129 | 97 | 226 | 7 | 4 | 11 | ... | ... | ... |
| Under 1 Month ... ... | 202 | 170 | 372 | 26 | 24 | 50 | ... | ... | ... |
| do. 6 " ... ... | 258 | 219 | 477 | 22 | 14 | 36 | 1 | ... | 1 |
| do. 1 Year ... ... | 134 | 100 | 234 | 11 | 16 | 27 | ... | ... | ... |
| 1 to 5 Years ... ... | 561 | 545 | 1106 | 27 | 27 | 54 | ... | ... | ... |
| 5 to 10 " ... ... | 204 | 206 | 410 | 18 | 9 | 27 | 2 | ... | 2 |
| 10 to 15 " ... ... | 83 | 73 | 156 | 5 | 15 | 20 | 2 | ... | 2 |
| 15 to 20 " ... ... | 112 | 95 | 207 | 11 | 6 | 17 | ... | ... | ... |
| 20 to 25 " ... ... | 167 | 125 | 292 | 12 | 10 | 22 | ... | ... | ... |
| 25 to 30 " ... ... | 179 | 153 | 332 | 18 | 6 | 24 | 1 | ... | 1 |
| 30 to 35 " ... ... | 138 | 121 | 259 | 21 | 12 | 33 | ... | ... | ... |
| 35 to 40 " ... ... | 217 | 163 | 380 | 11 | 9 | 20 | 1 | ... | 1 |
| 40 to 45 " ... ... | 98 | 73 | 171 | 11 | 10 | 21 | ... | ... | ... |
| 45 to 50 " ... ... | 114 | 82 | 196 | 11 | 5 | 16 | 2 | ... | 2 |
| 50 to 55 " ... ... | 85 | 62 | 147 | 6 | 3 | 9 | ... | ... | ... |
| 55 to 60 " ... ... | 100 | 90 | 190 | 11 | 6 | 17 | ... | ... | ... |
| 60 to 65 " ... ... | 88 | 91 | 179 | 11 | 7 | 18 | ... | ... | ... |
| 65 to 70 " ... ... | 104 | 128 | 232 | 10 | 8 | 18 | ... | ... | ... |
| 75 and upwards ... ... | 143 | 243 | 386 | 16 | 13 | 29 | 1 | ... | 1 |
| Total ... | 3,116 | 2,836 | 5,952 | 265 | 204 | 469 | 10 | ... | 10 |

Rangoon,
31st August 1869.

**D.**

*the several Races in the Province of British Burma, during the year*
*Population* 295,229.

| Shan. | | | Chinese. | | | Natives of India. | | | Other Races. | | | Total. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Remarks. |
| 2 | 1 | 3 | 4 | 4 | 8 | 7 | 10 | 17 | 7 | 4 | 11 | 156 | 120 | 276 | |
| 1 | 1 | 2 | 5 | 5 | 10 | 21 | 13 | 34 | 14 | 6 | 20 | 269 | 219 | 488 | |
| 2 | 1 | 3 | 8 | 2 | 10 | 17 | 11 | 28 | 14 | 14 | 28 | 322 | 261 | 583 | |
| 2 | 2 | 4 | 1 | 4 | 5 | 17 | 3 | 20 | 14 | 8 | 22 | 179 | 133 | 312 | |
| 6 | 2 | 8 | 13 | 5 | 18 | 30 | 21 | 51 | 67 | 50 | 117 | 704 | 650 | 1,354 | |
| 3 | 1 | 4 | 1 | 3 | 4 | 6 | 8 | 14 | 19 | 19 | 38 | 253 | 246 | 499 | |
| 2 | 1 | 3 | 1 | ... | 1 | 10 | 12 | 22 | 14 | 6 | 20 | 117 | 107 | 224 | |
| 2 | 1 | 3 | 3 | 2 | 5 | 35 | 5 | 40 | 8 | 2 | 10 | 171 | 111 | 282 | |
| 6 | 1 | 7 | 10 | ... | 10 | 44 | 12 | 56 | 6 | 3 | 9 | 245 | 151 | 396 | |
| 9 | 2 | 11 | 24 | 3 | 27 | 77 | 14 | 91 | 14 | 7 | 21 | 322 | 185 | 507 | |
| 10 | 5 | 15 | 18 | ... | 18 | 64 | 15 | 79 | 13 | 9 | 22 | 264 | 162 | 426 | |
| 6 | 3 | 9 | 10 | 1 | 11 | 61 | 9 | 70 | 19 | 4 | 23 | 325 | 189 | 514 | |
| 5 | 2 | 7 | 14 | . | 14 | 28 | 8 | 36 | 7 | 3 | 10 | 163 | 96 | 259 | |
| 5 | 1 | 6 | 10 | ... | 10 | 40 | 7 | 47 | 7 | 10 | 17 | 189 | 105 | 294 | |
| 1 | 1 | 2 | 6 | ... | 6 | 17 | 6 | 23 | 8 | 8 | 16 | 123 | 80 | 203 | |
| 5 | ... | 5 | 3 | ... | 3 | 14 | 8 | 22 | 9 | 12 | 21 | 142 | 116 | 258 | |
| 2 | 4 | 6 | 2 | ... | 2 | 20 | 2 | 22 | 11 | 1 | 12 | 134 | 105 | 239 | |
| 4 | 2 | 6 | 4 | .. | 4 | 16 | 4 | 20 | 7 | 6 | 13 | 145 | 148 | 293 | |
| 3 | 3 | 6 | 13 | 1 | 14 | 26 | 19 | 45 | 6 | 15 | 21 | 207 | 294 | 501 | |
| 76 | 34 | 110 | 150 | 30 | 180 | 550 | 187 | 737 | 263 | 187 | 450 | 4,430 | 3,478 | 7,908 | |

A. J. LOWIE,
*Sanitary Commissioner, British Burma.*

# SANITARY INSPECTION REPORT.

## THAYETMYO.

——000——

*Dated* 15*th June* 1868.

Since visiting Thayetmyo, in 1860, it is pleasing to observe that so much has been done to improve the health of the station. It being no part of my duty to report on the health of the Cantonment, I shall confine myself to the Sanitary state of the civil quarter, its population and Public Institutions. Much yet remains to be accomplished, and it is gratifying to note, that extended Sanitary measures are receiving attention in this direction. There is nothing however immediately required to be done of such magnitude that a little energy on the part of those concerned, cannot readily overcome.

2. Thayetmyo offers far greater facilities with its hard gravelly soil and natural and ample drainage fall, for the adoption of those modern appliances, which are the result of common sense, experience in fact,—and without which it is impossible that a town can be considered in a good sanitary condition or its population placed in the most favorable position as regards health, than the towns and vilages of the Delta of the Irrawaddy.

3. My inspection has been chiefly confined to the following :—

1.—"Present state of the new Gaol, and fitness or otherwise for the reception of the Prome prisoners."
2.—Sanitary state of the town.
3.—Sickness prevailing.
4.—Mortality.
5.—Sanitary state of the Bazaar.
6.—Condition of the Slaughter House (new.)
7.—Court Houses.
8.—Lock-up.
9.—Dispensary.
10. Vaccination.

4. My opinion on the state of the new Gaol has already been forwarded to you through the Commissioner of the Division.

5. SANITARY STATE OF THE TOWN.—Generally, the main street is clean. I cannot express myself so favourably of the other streets, the drains throughout the town have sufficient fall, but require greater attention. The houses are clean, roomy and of a better class than is usually found in small stations. A good many fine dwellings are in course of erection well separated from each other, and no better test could be found of the prosperity of the people than this ; money would seem to be plentiful.

6. WATER—The well water is exceedingly hard, which is due I think to the use of lime in the construction of the masonry, and not so much to the proximity of limestone hills, or to the presence of Kunkur in the soil. The sand bank prevents people from obtaining sufficient water from the river. Good wells properly constructed could be sunk outside the town.

CESSPOOLS—Are the order of the day. There are no Public Latrines, there cannot be however, the slightest objection to their immediate adoption here, in suitable and convenient localities. The town runs parallel to the river, and the people would not have far to go to them, if placed at the back. The plan of Latrine I would recommend for the town of Thayetmyo, is a modification of the dry earth system. It is this, construct several boxes on small wooden wheels, run them together, in the required number on planks placed parallel, over separate pits, not one long pit. The earth from the pits should be thrown up in the rear and protected with thatch to keep it dry. The Mheter in charge should be obliged to cover over each day's accumulations once at least, morning and evening with a small portion of the earth, when the pits are nearly full others should be dug and the boxes removed, the old pits being now filled up completely. In this way a wholesome atmosphere could be preserved and cleanliness in the town enforced. It must not be supposed that any great expenditure of money is required for this plan of Latrine, nor will the pits fill up so rapidly as might at first sight be presumed.

7. The beauty of the plan is its simplicity, and the readiness with which the whole system can be broken up put into detached privies, or removed bodily from place to place. To introduce the Reverend Mr. Moule's dry earth system, or even Dr. Hathaway's into a Burmese town is impossible. The objections to them are obvious, and have been fully set forth in a previous report on the "best plan of conservancy for Towns, &c. in British Burma."

8. The inspection of the plan I advocate, when in full working order, would be a very simple matter, but it must be unflagging. In the dry weather several of these latrines might be constructed on the sand bank in front of the town for the convenience of those living on the bank of the river. No offensive smells could possibly arise if the simple directions I have given are followed. I would wish the Chief Commissioner to sanction the construction of one such Latrine for the town of Thayetmyo as an experiment. The plan is acceptable to the people and I am convinced myself of its efficiency if properly looked after.

9. Sickness Prevailing.—There has recently been a slight outbreak of Small Pox in the town, but the rains have checked its further spread. The disease was imported from Prome where it is I believe epidemic.

10. Vaccination.—The Civil Surgeon, Dr. Rickard, states that the practice of Vaccination has ceased, and that he is sorry to be obliged to say that he considers the operations of the past cold season most unsatisfactory.

11. Mortality.—The total population is estimated at 8,000 souls. The death rate for 1867-68, was 2½ per cent., and the birth rate 3 per cent.

At present the town is remarkably healthy

12. Bazaar.—The Bazaar is clean, well supplied apparently and very well attended; some of the drains I should like to have seen cleaner. The meat and fish stalls are placed on the bank of the river; the articles exposed for sale were of good quality. I would suggest that the "ngapee" stalls also be placed outside the main buildings.

13. New Slaughter House.—This is being constructed on a very good plan, but why it has not been finished and in use long ago requires inquiry. The Assistant Commissioner informs me that it was commenced upwards of six months since. The old Slaughter House has been condemned and the less said about it therefore the better. The new site has an excellent well in one corner of the fenced-in-compound, containing abundance of good water.

14. Court Houses.—Require repairs. The roof in many places leaks and the whole is damp and unhealthy. It has not been painted or white washed for years, consequently it is dirty. A properly constructed Latrine on the dry earth principle should be erected near the Courts. The present filthy mess in the vicinity might then to a great extent be avoided.

15. Lock-up.—This building is condemned and that is about the only good thing which can be said of it. At present there are ten prisoners locked up in it, and I would suggest therefore that the place be white-washed and the wainscoating be tarred; moreover some ventilation near the floor is necessary. A little water now and again also would not do any harm to the floor itself. Annual repairs to Public buildings would appear unattended to, judging from what I see around me. I certainly should say that this Lock-up has never been white-washed since it was constructed.

16. Dispensary.—The place was dirty and the Latrine filthy, the latter has not been constructed on the dry earth system, which to me is unaccountable. The seats are built of masonry containing lime; I have addressed the Civil Surgeon on this subject: there was no lavatory that I could discover.

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# SANITARY INSPECTION REPORT.

## PROME DISTRICT—POUNGDAY.

1. Sanitary condition of the Town.
2. Sickness prevailing.
3. Mortality.
4. Bazaar.
5. Slaughter House.

6. Thannah.
7. Public Latrines.
8. Water supply.
9. Court House.
10. Drainage.
11. Roads.

TOWN.—The town is well laid out and the new Government road to Tarpoon and Zingoung runs through the centre of it. The houses are good and built well apart from each other. There is no want of ventilation.

2. SICKNESS.—Fevers and a slight outbreak of measles.

3. MORTALITY.—There is no Registrar of Births and Deaths in this town, it is impossible therefore to obtain accurate information as to the state of the Public Health. It is vaguely described as good. The system of registration might be extended to Poungday, now that an Assistant Commissioner is stationed there.

4. BAZAAR.—The Government Bazaar has not yet been commenced, Captain Furlong says that a Bazaar will pay well. The miserable shanties, composed of bamboos and thatch, now in use, are kept as clean as it is possible to keep them.

5. SLAUGHTER HOUSE.—Cattle are slaughtered in this town every day. Shambles on the Thayetmyo plan should be erected.

6. POLICE THANNAH.—Clean.

7. PUBLIC LATRINES.—There are none, they should be erected on the low ground on the west side of the town. The plan suggested in my Thayetmyo report would answer best.

8. WATER SUPPLY.—Water is obtained from wells situated to the Northern extremity of the town and to the East; the Government wells seven in number, having been chiefly sunk to the West of the town, contain impure water, the drainage and percolation flowing in that direction. These should be closed and new ones constructed to the eastward. They are urgently required. Among Phongyee Kyoungs to the

north of the town there is a large tank. Sanction was given to expend 5,000 rupees, I understand for Sanitary improvements in Poungday: the whole sum was thrown away in deepening this tank, but why, no one can inform me. The earth was not wanted, as it still remains heaped up on either side of the tank. The people do not, and I believe never did use the water. I think the subject should be inquired into.

9. Court House.—Clean.

10. Drainage.—Superficial drains exist, but they are of very little use as they are constantly being clogged with vegetation, masonry drains alone will stand in this country.

11. Roads.—A very good road has been formed by the Assistant Commissioner, Lieutenant Furlong, intersecting the main street or highway. It admits of a free circulation of air, and allows the more densely populated portion of the town to be drained; the construction of a similar road, further south, is in contemplation, and is greatly needed as a sanitary measure. Lieutenant Furlong only awaits the accumulation of sufficient funds to commence operations.

12. I beg to draw the attention of the Chief Commissioner to the state of the Poungday road. That section of it from Engmah to Poungday, a distance of ten miles only; is impassible, although it has been under construction for upwards of 11 years, The want of a good road in this direction not only retards communication, but cultivation also, and keeps the progress and prosperity of the people in this rich district in a backward state.

———000———

## ENGMAH.

13. Kodok.—This village has made no advancement since I visited it seven years ago; the people are squalid and sickly. Fevers and large spleens are common. The hamlets do not appear to have increased in size. I allude to those situated round about the Engmah swamp; this swamp is shallow and might be drained by removing certain obstructions of no great extent (chiefly gravel strata) in the bed of the Myit-ma-kat-chyoung, its outlet, and by perhaps, cutting an additional channel also, into the Lo-tho-chyoung or some of its swampy feeders

near Prome. This swamp is now a large lake some 15 to 20 miles round. It forms the head waters of the Hlyne River.

14. It is a question of some importance, whether it would not be more profitable to reclaim this large area of arable land and place it under cultivation, thereby improving the health of the people and inducing others to settle, than to remain satisfied with the paltry annual income of a little over 2000 rupees which is obtained by the sale of the fisheries and leaving things as they are.

15. In addition to the want of water way, in the absence of sufficient and suitably situated bridges from the north side of the Poungday road, there has lately been constructed a large brick culvert at one side of the Myit-ma-kat nullah, whereby its width has been reduced two thirds; consequently what little cultivation did exist to the north of the road is becoming flooded and therefore abandoned.

———ooo———

## PROME.

1.—*Gaol.* 2.—*Sanitary condition of the town.* 3.—*Sickness prevailing.* 4.—*Mortality.* 5.—*Dispensary.* 6.—*Government School.* 7.—*Bazaar. (a.)—Prome Town. (b.)—Sinzoo. (c.)—Naweng.* 8.—*Slaughter House* 9.—*Water supply.* 10.—*Drainage.* 11.—*Public Latrines.* 12.—*Grave Yards.* 13.—*General Remarks.*

1. Gaol.—Clean and prisoners healthy. Latrine clean. Dry earth system in use, but the masonry constructed with lime.

2. Sanitary Condition of Town.—The Town is well laid out, the streets are wide and numerous, the houses are well built; but the roads are unfinished, and are neither metalled nor drained. The town is pretty clean generally.

3. Sickness prevailing.—Fevers, Small Pox, and Measles are causing considerable mortality; the returns of deaths for last month, from the latter diseases alone, shewed 13.6 and 25 respectively. The practice of vaccination ceased with the setting in of the rains; three good Assistants are required in this town during the cold season. Dr. Mac Donald, the

Civil Surgeon, says, that with such help he might hope to check the further spread of Small Pox. I agree with him and would recommend the subject for favorable consideration; the sanitary improvements which are now being carried out must reduce miasmatic diseases to a minimum of severity. The swamps in and around Prome, which are, there is little doubt, the true originators of this class of diseases are to be filled up. Thus one great source of serious sickness will have been got rid of.

4. MORTALITY.—The population is set down at 23,420, the ratio of deaths being for the past year 49.60 per 1000. I cannot accept the 23,420 as an accurate estimate. I feel confident that were a census taken, the population would be found to exceed 30,000 in number, this of course includes the suburbs.

5. DISPENSARY.—Clean: the privies were tolerably clean, lime here again, has been used in their construction. This Hospital is situated at too great a distance from the town. The people complain of this. It is not attended therefore as it should be.

6. GOVERNMENT SCHOOL.—Clean; there is no latrine. One should be built.

7. BAZAARS:—

*(a.)* Prome town.

*(b.)* Sinzoo.

*(c.)* Naweng.

*(a.)* THE PROME TOWN BAZAAR.—Is pretty clean. It should be paved, drained, and a proper supply of water provided. The chief building is for dry goods, the meat and fish stalls being separate and situated between it and the river's bank. These buildings cannot be kept thoroughly clean, unless provided with an ample supply of water close at hand. At present no such provision has been made.

*(b.)* SINZOO.—This is a vegetable and fresh fish bazaar. It was clean when I inspected it.

*(c.)* NAWENG.—This is a dry fish and ngapee bazaar. It was clean when I visited it. All these bazaars pay well and that means they are well attended; they all require paving, draining and water supplies. The floors should be constructed of bricks placed on edge, and covered with asphalte.

8. SLAUGHTER HOUSE.—An average of 17 bullocks and other animals are killed in Prome daily, yet strange to say there is no slaughter house. This is a great sanitary defect. Shambles, as I have already said pay well in all our large towns, one therefore, if for no other reason, should be erected here without delay. I would recommend the Thayetmyo plan of slaughter house, as best adapted for the purpose.

9. WATER SUPPLY.—The inhabitants in the town proper obtain their water from the river. Those living in the suburbs draw theirs from wells. The tanks are useless, the people will not use the water. I shall refer to this subject again presently.

10. DRAINAGE.—The levels of the town having again been taken, this work should be pushed on with vigour. The roads in the town should first of all be completed, then the side drains should be constructed as in Rangoon. These drains keep the surface soil dry, preserve the roads, improve the general health and serve a great purpose as land marks, in keeping the people from encroaching on the highways when erecting new buildings.

11. PUBLIC LATRINES.—There are none. I cannot understand why *one*, at any rate has not been erected, no further time should be lost in constructing them.

12. GRAVE YARDS.—They are now too close to the town. A more suitable site should be selected at a distance from all habitations: the grave yard at the Naweng is a terrible place, I recommended the closing of this years ago.

GENERAL REMARKS.—Prome is built on an alluvial deposit; sand, sandstone and gravel appearing to the South and East. The percolation through the sub-soil and general drainage is East and South East, consequently the tanks which have been constructed in the old ditch contain impure water, the people cannot use it. Tanks in a town at any time are a mistake. It is my opinion therefore, that not only should those which exist be filled up, but that others should certainly not be constructed. I see from Mr. Dunn's scheme for filling in the swamp at the back of Prome that he contemplates the formation of several tanks, and that they are to be filled with rain water from the town, From Major Oliphant's remarks

on the back of Mr. Dunn's paper, I infer that it is intended that the scourings from the town of Prome should be conveyed down the street gutters into the proposed tanks. This would indeed be turning sanitary science topsy-turvy. But I hope I am mistaken: I certainly most strongly advise the Chief Commissioner. not to sanction, for the reasons I have given, the construction of any additional tanks in Prome. They never can in such a soil and in such a town as this, contain good water. I believe that those which now exist are injurious to health. Prome will some day have to be supplied with water from a large reservoir, but this will have to be formed on the hills to the South of the Town.

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## SHWE-DOUNG

BAZAAR:—When I visited the Bazaar it was not clean; the well is not deep enough, and it contained dirty water. The town was fairly clean and the roads well laid out. They sadly want metalling; the old portion of the Poungday and Prome road which runs through Shwè-doung has been allowed to get into disrepair, and communication is stopped in consequence. The Poungday people do not take their produce to Prome but to Shwè-doung.

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# SANITARY INSPECTION REPORT.

## MYANOUNG DISTRICT.

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*Henzadah 9th August* 1868.

Between Prome and Myanoung, the head quarters station of the Tharrawaddy district, there are numerous towns and villages situated on both banks of the Irrawaddy. It is my intention to give distinct detailed reports of the sanitary condition of these places, not head quarter stations, when I have had time to classify them according to their several positions, populations and special requirements.

2. Towns, villages and hamlets in the interior of the several districts into which this large province is divided, as well as those bordering on the large rivers, possessing no

funds to effect needed sanitary reforms, must necessarily be provided for, by local legislation or by special grants. This of course will require the submission of a complete report, which shall reach the most outlying hamlets, prominently noting the wants of each community, that the Chief Commissioner may be enabled from such reliable data, to form a correct idea of the probable outlay necessary to the introduction of those measures, conducive to the better preservation of health and life among the rural population.

3. At present therefore, I shall continue to report only on those municipal towns and capitals of districts where funds are or should be available to carry out my recommendations. On this occasion, I visited Shwè-doung, Shwè-doung-myo-mah, Pa-doung, Key-they and Thom-bo, besides numerous other small townships and villages. I only casually allude to them now, to show that they have not escaped my notice.

4. The sanitary state of Shwè-doung has already been cursorily noticed. The remaining places all require attention in regard to the water supply, roads, drainage, and public latrines.

5. Keythay a very large town should certainly be provided with a good bazaar. At Thombo one is in course of erection, but there it is not so much required as at Keythay which is the largest town in this part of the Prome District.

6. Immediately to the rear of Padoung there is a large swamp caused by the flooding of the river. Perhaps a bund with suitable sluice gates would reclaim the land which is adapted to paddy; but the feasibility of this measure is a subject for another department. to consider. The people would certainly enjoy better health than they now do were the water kept out and the land cultivated.

All our large towns and villages should have the tile order extended to them. Tiling is far less expensive than the repeated building of a new house. Yet this latter and ruinous operation has generally to be performed yearly, fires being as regular as the harvesting of Thekay or country thatch.

8. The tile law has been put into force in Rangoon, Prome and some other large towns with a very sensible reduction in the frequency of fires, and with marked benefit to the general health and pockets of all concerned.

9. MYANOUNG:—

1. *Town.* 2. *Drainage.* 3. *Water supply.* 4. *Civil lines.* 5. *Court Houses.* 6. *Lock-up* (new.) 7. *Lock-up* (old.) 8. *Bazaar* (old.) 9. *Bazaar* (new.) 10. *Latrines.* 11. *Dispensary.* 12. *Public Health—Mortality.* 13. *S. P. G. Mission School.* 14. *Thannahs.* 15. *Police Lines.* 16. *Slaughter House.*

TOWN.—This is of no great breadth, and generally runs parallel to the river in its northern portion, but owing to the configuration of the ground and the presence of a small creek to the south, it extends back to some distance.

10. The station of Myanoung including the town, is bounded on the north by a small cross bund, to the west by the Government embankment in its whole length, and to the south by the "Eng Daw" highland covered with forest. Both the town and the civil station, the latter lying to the north, contiguous to each other, are in the rains considerably below the highest rise of the river. They would be flooded were it not for a small bund skirting the river bank, constructed many years ago and which is connected both north and south by small cross bunds with the embankment just mentioned.

11. The average distance of this embankment is some three hundred yards or more (for it varies) from the bank of the river, and it has been constructed with earth taken from both sides of it by excavating ditches of considerable depth parallel to each other, in its whole extent. A sad misfortune for Myanoung. There was no sufficient reason for cutting on both sides of the embankment, especially in a station like this. The land was low enough before, but now in addition to its natural defects, the most filthy system of stagnant ditch ponds extends throughout the rear of town and station.

12. This most lamentable error, for it can be called by no other term, will cost the Government thousands of rupees to rectify. I say Government, because I presume, the municipal fund of Myanoung will not be employed for the purpose of filling these ditches up again, certainly the embankment

was not erected for the benefit of the town and the horrid ditches have not improved its salubrity.

13. DRAINAGE.—From what I have said it will be seen that the station and town of Myanoung are surrounded by bunds to keep the river water from flooding them. Thus circumstanced it is impossible to drain by natural outfalls, until the river recedes. So long as its waters remain above the level of the place, so long must Myanoung remain more or less swamped by its own storm-waters and this state of things must be expected to continue on and off for at least three months, viz: in July, August and September of each year, the amount of percolation also through the soil and leakage through the sluice gates, which are very imperfectly constructed is considerable.

14. The old river bund and sluices all require attention. The sluices in use in the cross bunds are on the common shutter plan. The grooves having been made roomy to admit of the easy raising and lowering of the gates, and what was not of course contemplated, although it must have been self evident from the first, the easy ingress and egress of the water also, one way or the other, just as inside or out, it happens to rise the highest.

15. This was the state of two of them at the time of my visit, and I at once drew the attention of the Executive Engineer to the matter, who caused the faulty gates to be blocked up with earth, to be removed again on the subsidence of the river.

16. Sluice gates in a town should be self acting, of iron, to be shut by the river and opened by the head of the contained water as soon as the river water falls below the level of the inside water.

17. Sluice gates of wood in the embankment are a mistake. One, I believe burst last year, and great destruction of property would have resulted, had not the river most providentially fallen shortly afterwards. Culverts in masonry, provided with cast iron sluices should replace all those now in use.

18. WATER SUPPLY.—This is obtained chiefly from the river all the year round. There are few wells. Those being the best which are situated near the high land to the south. Bur-

mese wells are as a rule improperly constructed. They simply dip into the surface soil, whereas to obtain wholesome water, they should be sunk so as to escape surface infiltration To construct wells a practical knowledge of the subject is necessary. It would be absurd to expect this knowledge at the hands of a rude people like the Burmese, a people without resources.

19. I believe the necessary tools for deep well boring have been in store both at Rangoon and Akyab for some years, yet I have not heard that one well has been bored in any part of the Province, although the want of good water is very generally felt throughout the whole country, more so in Rangoon and Akyab perhaps than anywhere else.

20. The principal rivers of British Burma afford a constant and ample supply of water to all living on their banks. Such water however is usually dirty and frequently full of sediment; and during the seasons of cholera visitation, may become the means of spreading that disease epidemically throughout the country.

21. The longer I live, the more I am convinced that good potable water is of first importance to health. In British Burma the really pure and wholesome article is obtained as a rule, with the greatest difficulty. It may be said of this country generally without exaggeration, "Water water everywhere and none fit to drink."

22. All this might be remedied were the work taken in hand as it should be. Properly constructed wells in selected localities for towns and villages &c., in the interior;—I say properly constructed, because I have already had to draw attention to the mistakes committed in well sinking; no lime for instance should be used in the masonry, it renders the water hard; iron or glazed earthen-ware pipes to conduct river water to convenient places for pumping filtering and storing for communities living on the river banks; and water works such as are contemplated for Rangoon, for towns where similar sources of supply are at hand. These are the chief points which should form the basis of any general scheme of water supply. I shall consider more minutely the cardinal points to be observed in the construction of wells, reservoirs &c., in another report.

23. The importance of an ample supply of good water to the general health of all classes in British Burma cannot be estimated too highly. The matter should be taken in hand, and when once a village or town has been provided with the necessary supply, all old country wells and dirty tanks should be filled in and no one should be permitted to construct others in towns or any where else without sanction.

24. On the other hand, I would reserve certain plots in the neighbourhood of towns &c., on account of their geological formations, but well set apart from all habitations, in which philanthropic persons might sink wells, provided always that they adhered to our modern ideas of how a well should be made.

25. Before all things therefore, let us provide good drinking water for the people. Every other sanitary improvement is of secondary consideration to this. To go into the subject of water supply in this report in detail is unnecessary. I shall however at any time, only be too happy to examine the matter more fully.

26. Civil Station.—This is situated, as I have already stated, to the north of the town, and is occupied by the Civil Officers' residences, Clerks' lines, Court houses, Forest Office, Dispensary, Lock-up and Police lines. The natural and artificial drawbacks which I mentioned as existing in the town are equally extensive in this quarter, viz:—it is lower than the highest flood of the river, generally swampy, roads unmetalled, and the system of unwholesome ditch excavations lies in its rear throughout.

27. It is useless to talk about drainage until these serious obstacles are remedied. In the meantime the bunds and sluice gates must answer the purpose, but then they must be constantly looked after, in the rainy season.

28. Matters cannot be left as they are for very long. The enormous area which has recently been brought under cultivation by means of the embankment, the rapid influx of population, and general prosperity and consequently increased wealth among the people have raised this thriving town to a position of some importance. It is the chief centre of trade and export of the Myanoung District.

Building sites are urgently required for its extension by natural causes alone; add to all this, the almost certainty that the much wished for and required railway by the people, will pass at no great distance from this town, and the necessity for keeping pace with the rapid progress of its inhabitants is sufficiently apparent.

29. We must not permit that deep interest we exhibit for the welfare of all classes to flag here, although the desired changes may lead to considerable outlay.

30. The houses in the town are too crowded. Some are very well built, but all are in danger from fire owing to their thatched roofs.

31. It will be seen that as the town is now situated it cannot be extended. The people are wealthy and prosperous, and increasing in numbers rapidly. Room must therefore be provided for the excess of population. The high ground to the south is not suitable, because when the water falls in the dry weather, boats are unable to approach the river bank, on account of a large accumulation of sand which has formed in this direction. Besides the Burmese have no means of sinking deep wells.

32. Two alternatives therefore remain for the consideration of the local Government. Either the outlay necessary for filling in, levelling and draining the space at the back of the town must be provided and the work taken in hand at once, or the few residents now in possession of the civil station must be directed to remove to the "Eng-Daw" where in my opinion the station ought originally to have been formed.

33. I would recommend the adoption of the latter expedient. The vacated ground might then be sold, the proceeds going to refund the officers and others, in the shape of compensation for removal, and towards the expense of laying out the new portion of the town. This would be a step in the right direction, and the local funds would not be interfered with.

34. The raising of the whole station of Myanoung is an engineering undertaking, and although I am perfectly competent to offer an opinion, it is the duty of the D. P. W. to submit a project and estimate for the approval of the Chief Commissioner.

35. The old fort wall at the back of the civil lines would go a great way in raising the low places and filling in the ditches to the north, while earth could be brought from the high ground to the south to fill in the remainder. The embankment being used for a tramway.

36. I am informed that Major Oliphant, the Superintending Engineer, who lately inspected Myanoung, proposes to construct a series of large tanks in the rear of station and town alongside the bund. This must not be sanctioned. The project has not been submitted to me for opinion. I have already recorded my reasons for objecting to the formation of tanks in one town, and I strongly urge the Chief Commissioner to veto any suggestion for their formation here.

37. All projects recommended in any department for the consideration of the local Government, of every nature whatsoever, which may directly or indirectly affect the Public Health should be invariably submitted to me for an expression of my opinion.

38. The want of money seems to be the great drawback to all Sanitary progress in Myanoung. I am told that there is not one pie to the credit of the municipal funds. It is even said that the town is in debt to the extent of 5,000 rupees I could not however ascertain on what works this sum had been expended, nor could I discover that any extensive progress had been made in town improvements during the past several years. The funds ought therefore to have accumulated by this date to a large amount and should now be available for those urgent Sanitary reforms which I have noticed.

39. Court House.—Clean and wholesome.

40. Lock-up,—(old)—Dirty. Condemned.

41. Lock-up,—(new)—Nearly completed. No portion has as yet been occupied. The barracks, two in number are well raised from off the ground, roomy and well ventilated. They are built of teak wood and the workmanship is excellent. The latrines, eating sheds and other out houses have not been commenced. The Inspector General of Prisons should be directed to see that the Latrines are properly built on the dry earth principle, and that lime is no where used in the construction of the masonry.

42. BAZAAR, (old.)—As clean as it is possible to keep mud floors. This whole place is in a dilapidated state. It is well attended.

43. BAZAAR, (new.)—Months ago part of the walls were erected, and are now left exposed without any kind of covering to the South West Monsoon, which is not likely to improve them. I was informed that the frames for the doors and windows not being ready, caused the delay. I think this might have been thought of before. Surely it does not take months to make them. They could be put together in Rangoon in a week, and forwarded by first steamer. In the meanwhile the broken ground, and heaps of building materials and rubbish, have encouraged a growth of rank jungle and other evils. The work should be pushed on with at once.

44. LATRINES.—There are no municipal latrines, they should be erected at once on the west side of the embankment. Available sites are plentiful and screen hedges might be planted now while the rains last.

45. DISPENSARY.—It might be cleaner. During the time of my visit, there were only three patients in Hospital. The compound requires attention. Latrine—a capital building externally, but in its internal arrangements evidently constructed for Europeans and not Natives. There are no pans or receptacles of any kind whatever. The excreta are passed on the ground and occasionally covered with lime!! Lime should not be used in any way about a privy. I drew the Medical Officer's attention to these serious defects.

46. There is great difficulty experienced in carrying out the dry earth system here for want of sweepers. Burmese will not perform Mehter's work. I do not therefore wish to blame the Medical Officer in charge of the Hospital, or the Committee of Management for neglect, though I do think that things might be better. It would be as well to enquire whether the services of a Mehter have ever been applied for. The Institution has six hundred (600) rupees to its credit.

47. I have not yet seen a latrine built in the first instance agreeably to Dr. Hathaway's plan of "dry conservancy" or the Rev. Mr. Moule's "dry earth system." Yet

copies of directions must have been forwarded by the Government to this country for guidance. I request that attention may be drawn to this subject. In future no modification of these gentlemen's plans should be permitted. To "adapt them to the climate of Burma" without my approval, I consider a mistake.

48. S. P. G. MISSION SCHOOL.—A small Burmse house -clean and in good order. There is no latrine attached to it and there is no room for one.

49. PUBLIC HEALTH.—Remarkably good. At present there is little or no sickness in town or station. A change for the worse must be expected as soon as the river recedes. The estimated population is put down at 5,598, which in my opinion is very far below the truth; during the past year the birth rate was 35.80 and the death rate 21.60 per 1,000 of population.

50. TANNAHS.—Clean and in good order.

51. POLICE LINES.—There are no Government barracks. The police live in small detached huts of native build. The lines are overgrown with jungle which should be cleaned away.

52. SLAUGHTER HOUSE.—Cattle are killed in Myanoung daily, yet there is no Slaughter house. One should be erected on the Thayetmyo plan, and placed on the West side of the embankment, but at some distance of course from the town.

53. Since I commenced to write this report, I hear that it has been suggested to break up the Civil Station at Myanoung, and remove the head quarters of the Tharrawaddy Division to Henzadah. As far as I am concerned I may mention that, one station is equally as healthy as the other. There is ample room at Henzadah for all the necessary residents and Public Offices. The policy of the step rests with the Local Government. I have no objections to make in a sanitary point of view.

# SANITARY INSPECTION REPORT.

## HENZADAH DISTRICT,

*Rangoon 20th August* 1868.

The distance from Myanoung to Henzadah by the Irrawaddy is 75 miles, and at the time of my visit, although not at its highest, the river had generally flooded both banks. Many of the towns and villages along this route were under water. Zaloon was completely inundated, and the force of the current through the town so strong, that my boat was with some trouble made to stem the tide in the principal street and to maintain its position when anchored there.

2. I could do nothing here. It even appeared doubtful to my mind how long the town could resist the pressure, and whether the river would not very shortly make a clean sanitary sweep of the whole place. The river has since subsided and Zaloon is safe for the time being.

3. The other large towns visited on this occasion north of Henzadah will be reported on separately.

4. HENZADAH:—

*(a)—Town. (b)—Drainage, (c)—Water Supply. (d)—Court Houses. (e)—Lock-up,* (old.) *(f)—Lock-up* (new.) *(g)—Bazaar,* (old.) *(h)—Bazaar,* (new.) *(i)—Latrines. (j)—Dispensary. (k)—Public Health and Mortality. (l)—Tannahs. (m)—Slaughter House.*

5 (*a.*) TOWN.—The plan of the town is simple and perhaps the best that could have been desired for its position. The streets are wide and parallel to each other. Some have been laid with brick. The drainage too, evidently received attention at one time. All however have been sadly neglected for some years.

6. The Municipal and Bazaar Funds amount to a considerable sum and as no great Municipal works, or even necessary repairs to those which exist, have been undertaken in the interests of the people, or any other interest, since Henzadah was the head quarters station of this district, there

ought to be a very large sum of money in the Treasury to the credit of the town, quite adequate to the prosecution of those sanitary reforms for the public good which are so pressingly called for.

7. This town contains 18,000 inhabitants, and has a floating population of at least treble that number. Henzadah exports 60,000 tons of paddy and cleaned rice annually, and is only second to Prome, in the importance of its trade with Rangoon and "up country," and, although, one of the largest towns in the Province with a considerable revenue, both Imperial and Municipal, its sanitary state has been almost entirely overlooked,

8. Henzadah is built on an alluvial deposit. It is lower than the highest river flood, the water being kept out by a small bund as at Myanoung.

9. (*b.*) DRAINAGE.—This has been sadly neglected—It is bad. The natural drainage of the town, and in fact of the whole of this part of the country is westward—away from the river. In a town it is of great importance to health that all roads should be properly metalled and that the side drain be constructed of permanent material.

10. (*c.*) WATER SUPPLY.—At present it is obtained from the river and a few wells to the rear of the town. The latter from their low situation seldom completely dry up. Those in and near the town contain impure water, and are very little resorted to at this season. The river furnishes an abundant and of course purer supply. In the dry weather the enormous sand bank in front of the town almost entirely precludes the possibility of obtaining water from this source, and the inhabitants are therefore compelled to return to the wells.

11. But as I have said, the majority of these wells contain impure water, and for this reason, frequently they are situated in such close proximity to filthy privies and other abominations that it is impossible to believe that they can be free from fœcal contamination or other equally disgusting surface pollution.

12. These remarks on the cesspool and well system—common to all Burmese towns might be enlarged upon, but it is unnecessary; what I have said is sufficient for the pur-

pose in view. The Burmese, so particular in some domestic relations, are not over particular in this, either from habit, ignorance or carelessness.

13. I have already drawn attention to the imperfect manner in which Burmese construct their wells. It would be unfair on the other hand, not to give them credit for a practical knowledge in the selection of suitable sites for obtaining good water, or to say that they do not possess a correct palate. Yet admitting this, they fail to see that their own inherent filthy habits, may contaminate by surface infiltration their very best sources of supply. The Burmese are not singular in this respect, for we ourselves, if not theoretically, were practically ignorant of these facts, until the late Dr. Snow demonstrated to us, the spread of an outbreak of cholera in London, through the agency of an excrementally polluted well, not many years ago : yet the water was bright and sparkling and considered remarkably good. The Burmese do not use bad water from choice if they can get better.

14. The part which bad drainage, impure water and consequently foul air, play in the origin of all Zymotic diseases cannot be too frequently pressed upon the notice of the Administration. The presence of these serious evils in all our towns should awake us to a sense of our duty to the people we govern, for assuredly the whole responsibility of inaction rest with ourselves. The Sanitary machinery to affect a thorough reformation in these respects, must, I am thoroughly aware, entail considerable expenditure. But, as the deficiencies though great, can be remedied I have great hopes that, with a proper discreet outlay of our municipal funds, in a reasonable time all will be accomplished.

15. To improve the water supply, tanks of course must on no consideration be permitted. Tanks are atmospherically polluted in towns if by no other means. For Henzadah I can think of no readier and safer scheme for immediately supplying its community with good potable water, than by sinking a number of "Norton's tube wells" in proper places. It is quite possible to provide in this very easy manner water for the majority of our smaller towns also.

16. By securing to the people a certain supply of wholesome water during the whole year, I believe that generally all

would at once avail themselves of its benefits and the advantages which would thereby accrue to the general health cannot be overstated.

17. *(d.)*—COURT HOUSES.—Clean, and in good order.

18. *(e.)*—LOCK-UP (old.)—A dilapidated and dirty old building. The shed covering the Latrine has tumbled down. The site was under water.

19. *(f.)*—LOCK-UP (new.)—This is a fac-simile of the Myanoung Lock-up, but was not so far advanced towards completion.

20. *(g.)*—BAZAAR, (old.)—The buildings composing this Bazaar were in a dilapidated state; they were as clean as could be expected in the absence of repairs.

21. *(h.)*—BAZAAR, (new.)—The fish and meat stalls are finished. They were clean and well attended at the time of my visit. The drains around them however already require repair.

22. One only of the "dry goods" buildings has been taken in hand. The works are proceeded with very slowly. After deducting all expenses for management I believe the surplus rents from the Henzadah Bazaar amount to upwards of 600 rupees per mensem. This has been the case too for years, thus there must be more than sufficient funds in hand for its completion, within a reasonable period.

23. *(i.)*—LATRINES.—Public Privies there are none. They should be erected to the rear of the town in suitable places. There is ample room.

24. *(j.)*—DISPENSARY.—A small but excellent building. The outhouses are not all completed. It is in charge of a Native Doctor and has not been inspected for years. I must refrain from saying more about this Institution for fear of intrenching on the Department of the Deputy Inspector General of Hospitals. The building was as clean as neglect and the absence of patients could make it.

25. *(k.)*—PUBLIC HEALTH AND MORTALITY.—The estimated population in the town is stated to be 14,320. The birth rate during the past year was 42.80 and the death 29.70 per 1,000. At present the town is remarkably healthy.

26. *(l.)*—TANNAHS.—Clean and in good order.

27. *(m.)*—SLAUGHTER HOUSE.—Cattle are killed here daily, yet there is no slaughter house. One should be erected on the Thayetmyo plan.

28. On the 6th ultimo, I reported to the Chief Commissioner, by telegram, the extensive destruction of the paddy crops in this District by the flooding of the river and the bursting of the bunds. It is no part of my duty to remark on the engineering works in connection with the Government Embankment now in course of construction.

29. All questions of hygiene; plans of structural works for the healthful improvement of communities; drainage of towns and for agricultural purposes; well boring and sinking; roads; drainage; bunds and embankments; the alteration of water courses, and all projects emanating no matter from what quarter must, if sanitation is to affect any real good, be referred to the Officer whose special knowledge in such matters pre-eminently fits him to offer an opinion.

30. Now that a Sanitary Department has been established hygiene must not be ignored. Mistakes have been made in the erection of certain works by some Officers who assumed a knowledge of sanitation which they could not have acquired without special training. In future such mistakes must be impossible.

31. By so frequent a repetition of this subject I fear that the Chief Commissioner will not only be weary of it but consider me over anxious. Yet I can conceive no measure of equal importance—and I hope I have stated the case with sufficient distinctness—to the welfare of the people or the Government than what I now urge upon his attention.

32. In regard to the object of the best scheme of water supply for all situations, the details of the suggestions I have made, will require time and care for their elaboration I am fully aware, and the selection of that one most suitable to a particular locality, can only be determined after a personal inspection and full investigation on the spot. A thorough knowledge of the subject and common sense however, will, there is little doubt, overcome apparent difficulties.

33. To carry out all I have suggested for the sanitary improvements in Henzadah will necessitate a very large outlay, and there ought to be from the accumulated Municipal and Bazaar funds during the past several years, a sum quite sufficient to commence with.

34. What I do most energetically protest against, is the expenditure of municipal funds on objects other than those for which they are collected.

35. The Municipal tax and Bazaar rent levied in a town for benefits which the Government deem it necessary to provide for, should certainly be expended for the good of the people who furnish those funds. In justice to a community living probably amidst the most glaring insanitary conditions calling loudly for reform, such funds should first be expended on its pressing requirements, instead of being borrowed for projects elsewhere, projects not always absolutely necessary and of no benefit to the actual tax payers.

36. I am led to make these remarks from the apprehension that something of this nature is about to take place. It is proposed to build an additional Bazaar in Rangoon with money borrowed from the other Bazaar funds of the Province, in the face too of the fact that there is not an out-station which can spare one *pie* for such a purpose, and that the Sanitary condition of all has been more or less neglected.

37. I hope the Chief Commissioner will give this subject his most serious attention. To permit a continuance of this mischievous practice of borrowing the funds of our out-stations—a practice which if carried to the grave extent of leaving nothing for the sanitary improvements in those out-stations must be followed by injurious results to the general health and prosperity of all.

38. I do trust that there is no foundation for the rumour that the Chief Engineer is really about to construct this Bazaar with funds so obtained, after the remonstrances of all concerned.

39. The town of Henzadah. There is plenty of vacant land for its healthful extension, if the Government will only cause such land to be raised, drained and laid out with properly metalled roads. I cannot close this report without

mentioning that the Ex: Assistant Commissioner Moung Kyau Doon rendered me every assistance in his power during my inspection of the town and district under his charge. As far as Henzadah is concerned he does all he possibly can for its sanitary improvement, but the means at his disposal, viz: 50 Rs. per mensem and a daily average of 5 or 6 prisoners, are insufficient to enable him to accomplish any real or permanent good.

41. South of Henzadah to within about 12 miles of Donabew the towns and villages on the banks of the river were under water.

42. Donabew, I visited on the 10th of August. It was well above water and the cultivation had not suffered. This town was healthy.

43. Having completed my inspection of the towns and villages on the banks and in the immediate vicinity of the Irrawaddy, and as the weather and high rise of the river prevented my further usefulness in this direction, I returned to Rangoon on the 11th instant.

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# SANITARY INSPECTION REPORT.

## TOUNGOO,

*Rangoon, 8th Novtmber* 1868.

(*a.*) Town.

(*b.*) Drainage.

(*c.*) Water Supply.

(*d.*) Court Houses.

(*e.*) Lock-Up.

(*f*) Bazaar.

(*g.*) Latrines.

(*h.*) Dispensary.

(*i.*) Public Health and Mortality.

(*j.*) Tannahs.

(*k.*) Slaughter House.

(*l.*) Grave Yard.

(*m.*) The Revd. Dr. Mason's property and Institutions.

1 (*a*) TOWN.—This is well laid out. The streets are wide and the majority are metalled. A great many trees were I learn, cut down a few years ago. Fires also must have destroyed, from time to time, a large number as their charred stumps which are seen in several places testify.

2. At present new plants are being set at the sides of the roads, where needed. It is impossible, while forming new streets and clearing lots for houses, to help removing some trees where they are really in the way, but the practise of recklessly cutting down all vegetable life was a mischievous one, and I know that some of our stations have suffered severely in consequence. We are now however alive to the truth, that trees are not only ornamental in towns but great barriers to malaria, and it is the custom at present to plant where the axe was used before.

3. In towns and villages in addition to this known valuable property, trees afford a refreshing shade and prove useful in arresting the progress of fires. The Burmese select flowering, and fruit bearing trees as a rule with the latter object, as well as for the intrinsic value of their produce in the market. Most of the fruit trees of British Burma are ever-green, and whether the custom of planting them by the people of the country so extremly near their dwellings arose, in the first instance purely on account of the fruit, or whether by accident or the result of long experience, all three properties, viz: shade, food and healthfulness are combined in the selection. The Burmese undoubtedly possess the knowledge that such trees increased the salubrity of their towns. As an instance of this they ascribe the unhealthiness of Prome to the destruction of the vast number of large trees which once stood throughout the town. It is said that Prome was a very healthy place before the war and until all the trees were either cut or burnt down.

4. The principles which should guide us in the selection of those trees most suitable for towns are not generally considered. Hitherto we have been in some instances unwise in our choice, and in others again, no system is even now followed; on the contrary, an indiscriminate planting of any kind of tree is becoming the rule, and apparently at the arbitrary will of the responsible officer for the time being.

5. I now desire that all officers in charge of districts may be requested to make it a duty to encourage the planting of ever-green, flowering and fruit trees at the side of all streets and roads in towns and villages, where such have been constructed wide enough to admit of the same. Nearly every tree in the town of Prome was planted by private individuals. Colonel Ardagh, when Deputy Commissioner of that station introduced the system and it has been faithfully followed since. I do not anticipate any want of interest on the part of the people in this matter. They ever shew a readiness to plant and carefully nurse trees about their dwellings. The one thing needful only is a guiding hand to see that they are not set too close together or in unsuitable places. All this might be done without one pie of expense to the Municipal or other funds.

6. The trees now very generally planted in our towns are :—

Tamarind,
Jack,
Mangoe,
Peepul,
Padouk,

I wish to say a few words regarding these trees for general information.

The *Tamarind* is not an ever-green in country stations and only partially so in sea port towns. And although of great value for its fruit, when old it is easily set fire to through its centre, which usually destroys the tree.

The *Jack* only grows, well near the southern coast. It is not generally a very shady tree when of full size.

*Mangoe.*—This is a valuable ever-green tree always affording a delightful shade throughout the year.

*Peepul.*—This tree in up country stations drops its leaves in the latter end of January and does not renew them until late in April. The seeds carried by birds or the wind are apt to lodge in cracks and mouldings and there germinate to the injury of masonry buildings. It is therefore a dangerous tree to plant in our large towns.

*Padouk.* The padouk also drops its leaves and is of little value in the hot weather, when it stands as bare as a poplar in the winter months at home.

7. I shall at an early date circulate a list of the most useful trees in all respects for planting in towns and villages in British Burma. There doubtless are many valuable ever-greens peculiar to certain districts, but with which I am not personally familiar. Local officers therefore must in their selections use their judgment, always keeping well in mind the three principal requisites already mentioned.

8. The houses lately built in Toungoo are of a superior class and a very proper plan is followed, as far as practicable, of keeping each building well separated from its neighbour—thus ensuring light, ventilation, lessening the risk of fire and affording facilities for cleansing. The introduction of this important and wholesome arrangement is due to Major McMahon. The same system has also been carried out in Prome and with marked benefit. At present the town is not over-crowded and every care is being taken to prevent this by the authorities. The town is evidently a thriving one. Toungoo is built on a laterite soil, the greater part of which is above the highest flood level of the Sittoung river. There is ample room for its healthful extension.

9. *(b). Drainage.* The natural Drainage of Toungoo is towards the north east, and in this direction the drains have been cut. At the time of my visit although the river was very high the drains answered, but required constant attention. They quickly became clogged with rank vegetation, rats fill in earth from their burrowing and altogether they are a source of great trouble and absorb a large amount of labour which might be usefully employed for other purposes. Drains in this country should be made as far as possible self-acting. When revetted with good masonry they require but very little attention and are easily flushed. Simple drains cut into the earth are always unwholesome, and I now recommend that no time be lost in constructing proper masonry drains in this town. I would suggest that the main street be dealt with in the first instance, the improvement being extended afterwards to all those quarters in which the buildings have been completed and the roads finished and metalled.

10. Towards the back of the town there is a large swamp. This perhaps might be drained.

11. The town of Toungoo is surrounded by an old moat, said to be six miles in extent. Those portions of it between the town and river on its east side, and to the south, should certainly receive timely attention. Good deep drains might be cut across and throughout the whole length of it. At present the river floods the moat for a short time during its highest rises, but this could be prevented by the construction of good sluice gates set in properly constructed culverts for the purpose. On the subsidence of the river the gates could be opened when the contained water would escape.

12. If has been proposed to construct two large tank reservoirs here, but I object to tanks of any description near a town, and I do not see how water if stored in this situation could be wholesome or for what purpose it could prove useful. Such water would be too far away in case of fire in the town, and the people would always prefer well water or that furnished by the river for drinking purposes.

13. If this ditch were converted into tanks the aspect of the place would undoubtedly be improved, but that is all. Good deep drains laterally, dipping well into the sub-soil communicating with another running throughout the whole length of the ditch, which could also be partly filled in by levelling the bunds, and the construction of a good road all round the town would in my opinion tend more to improve the sanitary condition of the locality and check the nuisances at present committed under the protection which the high bund and low vegetation affords than any thing else.

14. At the time of my visit the exhalations from the moat were very offensive, and this I discovered to be mainly due to filth, &c., which finds its away into it from the Elephant and Cattle Sheds. Those stables are located on the southern bund and in the town proper—a most objectionable arrangement. I addressed the Deputy Commissioner on the subject (copy of letter attached) and requested that the animals might be removed from the town and neighbourhood of the ditch as soon as possible.

15. *(c.)* WATER SUPPLY.—There are several excellent wells sunk in the laterite soil. Many more are required. Some are situated too near to buildings. I would recommend the introduction of "Norton's tube wells" here The old wells which contain good water could be fitted with several tubes very easily, and then filled in with clay or laterite. Tubes thus sunk can be secured in their places at a trifling cost. Norton's tubes are generally in lengths of 30 feet and of various diameters, and when properly sunk must entirely preclude the possibility of pollution from the surface or through the subsoil. I believe that the fitful outbreaks of cholera which from time to time appear in some of our stations would be very considerably guarded against by a general use of these tube wells. Water undoubtedly is the chief medium through which cholera is spread, and of this I am daily becoming more and more convinced.

16. *(d.)*—COURT HOUSES.—A block of new buildings is now in course of erection for the Courts of this station. At present several old and dilapidated Zyats are used as public Offices.

17. *(e.) Gaol.*—I have already in letter No. 54, dated Toungoo, 28th September 1868, submitted a complete report on this Gaol.

18. *(f.) Bazaar.*—The meat stalls have not been erected. There is an old wooden shed outside the new Bazaar, which is used by the Butchers. This is unwholesome and objectionable. It is imposible to keep such places clean. The main Bazaar itself was clean and well attended.

19. *(g.) Latrines.*—There is only one public Latrine in Toungoo and that is attached to the Bazaar. It should be constructed on the dry earth principle. There is room for public privies, and the Deputy Commissioner promises to give the subject his early attention.

20. *(h.) Dispensary.*—Clean privies not worked correctly on the dry earth system.

21. *(i.) Public Health.*—At present good. The estimated population in this town is set down as 9,649. The birth rate during the past year was 24.60 and the death rate 28.60 per 1,000. If the death rate is correct, and I have no

reason to doubt it, there must have been great neglect in recording the births in 1867-68. I have already expressed this opinion in my Annual Sanitary Report. A Native Doctor has been appointed Registrar, and Dr. Parker hopes to obtain more accurate figures for the present year. I do not quite understand why there should be any difficulty in the matter of recording the births in Toungoo. A like difficulty is not experienced in other parts of Burma—that is, not to the extent it seems to have been in this station.

22. *(j.)* TANNAHS.—Clean.

23 *(k.)* SLAUGHTER HOUSE.—There is no slaughter house in Toungoo. One I think ought to be erected. The Thayetmyo plan is the best and the cheapest.

24 *(l.)* GRAVE YARD.—(Christian) very seldom used. It was overgrown with jungle at the time of my visit. The Burmese burial ground is at some distance from the town and like all others in the country. I purpose to remark on this subject separately.

25 *(m.)* I visited the Rev. Dr. and Mrs. Mason's ground and Institution on the opposite side of the river at Toungoo. It is not a part of my duty to inspect and report to the Local Government the Sanitary condition of the property &c., belonging to these Missionaries. I must therefore refrain from particularizing all I say. Yet, I think it just to these pioneers of civilization to record here, that I was exceedingly pleased with the cleanliness and good order maintained in all departments under their supervision.

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From A. J. Gowie Esqr., Sanitary Commissioner, British Burma to Major Mc. Mahon Deputy Commissioner, No. 55 Toungoo 2nd October 1868.

I am satisfied that the water contained on the old moat to the South and East of this town is dangerously polluted by the washings of the excrement, &c., from the Elephant and Cattle sheds which are situated on the old town wall to the South.

2. The exhalations arising from this cause are most offensive and cannot but prove injurious to the general health of all living in the neighbourhood.

3. I have the honor therefore to request that, you will take whatever measures you may deem most expedient to cause the sheds to be removed to a site at some considerable distance from the town and station.

4. The dry portion of the manure, rubbish and stable sweepings, should be burnt when practicable. if not disposable as manure for the soldiers gardens or other cultivation.

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# SANITARY INSPECTION REPORT

## SHWE-GYEEN.

RANGOON, 1ST DECEMBER 1868.

*(a.)*—Town.

*(b.)*—Roads.

*(c.)*—Drainage,

*(d.)*—Water supply.

*(e.)*—Bazaar.

*(f.)*—Court Houses.

*(g.)*—Police Tannahs.

*(h.)*—Public Latrines.

*(i.)*—Slaughter Houses.

*(j.)*—Gaol.

*(k.)*—Grave Yards.

*(l.)*—Bunds.

*(m.)*—General Remarks.

1. *(a.)* TOWN.—This has been well laid out. The principal thoroughfares were fairly clean. The remaining portions of the town deserve greater attention. Some of the houses are well built, but generally too much crowded together.

2. *(b.)* ROADS.—A few of the streets have been raised and metalled with laterite, which abounds in the station.

3. *(c.)* DRAINS.—These are all temporary. They are no where rivetted with masonry, and in consequence, a great deal of time and labour are expended in keeping them free from vegetation and in a cleanly state.

4. (*d.*) WATER-SUPPLY.—Water is obtained from the river and from wells. The former can never furnish a pure supply for drinking, and in the town, it is impossible to believe that the latter source can be free from pollution. Good water is procurable in the laterite soil to the North and East of the town. In these directions in selected places, properly constructed wells might be sunk. Norton's tube wells should be tried in the lower situations. The water of the Shwé-Gyeen river if pure (it has not yet been examined) and abundant at all seasons, might perhaps be utilized.

5. (*e.*) BAZAAR.—A large brick and tiled Bazaar has been recently erected. The building is far from complete. It is neither paved nor drained properly, and the meat and fish stalls have not yet received attention. At present an old and dilapidated wooden shed is made to answer the purpose—a very unwholesome arrangement. The Bazaar is kept as clean as its unfinished state will admit of.

6. (*f.*) COURT HOUSES.—Clean and in good order.

7. (*g.*) PUBLIC TANNAHS.—Clean.

8. (*h.*) PUBLIC LATRINES.—There are none. It is obviously the duty of the local officers to see that such conveniences are provided for the people, and there can be no question that public latrines are urgently required in this town.

9. (*i.*) SLAUGHTER HOUSE.—There is no slaughter house in Shwè Gyeen. The number of animals killed here is not large. The Deputy Commissioner might be addressed on this subject.

10. (*j.*) GAOL.—A full report on the state of this prison has already been forwarded to the Local Government (vide letter No. 57 dated Shwè Gyeen, 15th October 1868.)

11. (*k.*) GRAVE YARDS.—(Christian). This is very seldom used. It was overgrown with jungle when I visited it. The Burmese grave yard is at some distance from the town. Native burial grounds and burning places throughout the country require strict supervision. Special rules also must be framed for their better management.

12. (*i.*)—The greater part of the town of Shwè-Gyeen is regularly flooded during the high rises of the Sittoung and Shwè-Gyeen rivers. The vacant land to the North, between the town and the old fort is also subject to similar inundations. If it is desirable to prevent the "Spill" waters of these rivers deluging the town, one of the two following engineering works is necessary; either the land must be raised above the highest flood levels, or the banks of these rivers on the exposed sides of the town must be bunded.

13. This subject would appear to have already received attention. I am informed that a bund of some such description as that I have mentioned has been proposed, and estimated for at a cost of at least one lac of rupees. There are many details in a work of this nature which I would willingly have dwelt upon, had the scheme been submitted to me for opinion. Since such a reference has not been deemed necessary, I must be excused if I err in presuming that the subject has received all the attention and examination which it deserves, and that the plan adopted has only been decided upon after mature consideration.

14. Permit me however in a sanitary point of view to examine this subject more closely. Starting then with the acknowledged fact that Shwè-Gyeen is a feverish town and not questioning the propriety of making the place as dry as possible, with a view to diminishing its unhealthiness, the question naturally suggests itself, are these inundations to which the town is subjected the chief cause of its sickly condition? Again, supposing for the sake of argument that this point has been satisfactorily determined, are we sure that the result will be attained by bunding the rivers? Now with regard to the nature and extent of such a work, embracing as it does the disposal of the rainfall and drainage of the town at the same time that it is to keep the waters out besides other points which largely exercise a powerful influence on health and which cannot be "bunded," the engineer will find in the due performance of these, sufficient to task his utmost powers of ingenuity.

15. That such a task is possible I do not mean to question, but I do mean to doubt whether the administration would permit the necessary outlay, and I further think that

when the whole subject has been thoroughly investigated its rejection is highly probable.

16. The river water when it inundates the town, brings with this in suspension, a large amount of pure mineral silt some of this is deposited. The water however is never stationary. The drainage of the town therefore is effectually removed. Now all our rivers subside far below the level of the surface of the country long before the breaking up of the monsoon and the greater portion of such deposit is washed away again, and in Shwè Gyeen especially is this the case, where the rains are very heavy.

17. I have travelled up and down the Irrawaddy and Sittoung rivers in the past rains, during their highest rises; and I found the Public Health good everywhere. The mere flooding of a river therefore, immediately, causes no perceptible sickness, "*per se.*"

18. Bund out the rivers at Shwè Gyeen, and the drainage and filthy washings of the town must be detained for at least one month, during their highest rises (the rivers rise two or three times) and until the waters recede, when the abominable accumulations can be discharged, leaving a deposit of course of indescribable filth and rottenness fit to breed any plague.

19. The effect of detaining even for so short a period the stagnant scourings of a town like Shwè Gyeen must be experienced to be appreciated. The experiment is not however likely to be tried.

20. Water in a pure state is essentially necessary to health, in an opposite condition it would be impossible to estimate the mischief that would result to a community from its use. Lately the Medical officer of the Privy Council (I will here quote *in extenso*). "has suggested the importance of a medical inspection of the water supply, since the fearful Epidemics of Cholera of 1847, 1849, and 1866, have taught us that, however Cholera may be associated with and fostered by overcrowding, it is not to this condition we are to look for its rapid extension through the community, but that it is essentially to the condition of the water supply that its outbreak and spread are to be referred. It is gradually beginning

to be felt that those hygienic measures which the progress of modern investigation, founded on correct physiology and pathology, have discovered to be necessary, and which have always been insisted on by the more enlightened members of our profession, must be carried into effect, if the nation is to escape the wasting ravages of plague, of cholera, of typhus and other frightful pestilences."

21. These remarks apply with equal force to this country. The chief diseases of British Burma, fevers and dysentery, cause more than one half of the entire mortality, and both diseases are certainly preventible by hygienic measures. These same diseases have given the town of Shwè-Gyeen the unenviable reputation of being the most unhealthy station in all British Burma. Extended observation points to defective water supply, overcrowding and bad drainage as the most powerful inciters of dysentery, and the affinity between moisture and miasm is so constant, that it is not difficult to comprehend, that while we pay attention to the purity of the water supply and drain effectually, we get rid of the latter.

22. The laws of health are equally applicable to our towns, villages, and communities as they are in Europe. Let me dispel the vulgar belief that all fevers in this country are solely due to a malarious origin, a poisonous exhalation from the soil peculiar only to the East. The want of good potable water and of good and deep drainage, well metalled roads plenty of light and air, cause more sickness and mortality in our towns and villages than we have any idea of. Every one is ready to accuse the country for every ailment he may suffer from—while sadly neglecting at the same time those laws of health, in the faithful observance of which he alone can expect to live and enjoy health.

23. Great improvements have been effected with respect to sanitation in the town of Shwè-Gyeen, and more are in contemplation. The marked benefit to the public health in this town which has followed those sanitary works already accomplished, distinctly shews that our endeavours have been exerted in the right direction. The results have been so immediately satisfactory that we are more than justified in continuing the good work of sanitation.

24. I would suggest as the most sensible works for the further improvement of this town the following: Let the lac of rupees instead of being thrown away upon a bund be spent in filling up the low land with earth to be taken from the laterite soil to the north and east of the town—both situations are easily accessible. Then cut and revet deep drains to allow of the perfect, free and rapid scouring of the town during each down pour of rain. Sink artesian wells, (boring apparatus is procurable, I understand in Rangoon) Norton's tube wells in virgin soil, away from overcrowded places, prevent overcrowding and insist upon a proper system of public latrines being erected.

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# SANITARY INSPECTION REPORT.

## SHWE-GYEEN DISTRICT.

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South of Shwè-Gyeen, I visited the town of Sittoung, Woom-bah-dow, Kyiek-y-tha, Kyiek-hto, and Kin-yoobah, besides numerous other villages.

### SITTOUNG.

(*a.*)—Town.
(*b.*)—Drainage.
(*c.*)—Bazaars.
(*d.*)—Water Supply.
(*e.*)—Court House.
(*f.*)—Public Latrines.
(*g.*)—Public Health.
(*h.*)—Woom-bah-dow.
(*i*)—Kyiek-y-tha.
(*j.*)—Kyiek-hto.
(*k.*)—Kin-yooah.
(*l.*)—Bunds.
(*m.*)—Pyne-khyoung creek.

2. (*a.*)—Town.—The town is well laid out. The chief roads are metalled with laterite and gravel and are in good repair. The narrow streets and by-lanes require attention. The town on the whole was fairly clean at the time of my visit.

3. (*b.*)—DRAINAGE.—The drains are everywhere temporary—simple cuttings in the soil. They were tolerably clean. All should be revetted with masonry. A part of the town is occasionally inundated during the rains. This, however, does not appear to cause any special sickness as the water is readily drained away on the subsidence of the river, which occurs long before the monsoon breaks up.

4. (*c.*)—BAZAAR.—This consists of two wooden buildings —one only of which is at present in use. The Bazaar was not so clean as I should like to have seen it: but as I chose the busiest time of the day for my inspection, it is just to add, that the mess created at such an hour is almost unavoidable. Refuse boxes are much required in all our bazaars. I discovered no accumulations of dirt in or about the buildings, and I infer from this, that attention is paid to the cleanliness of the place at other times.

5. The consumption of fish at Sittoung is large, and a great quantity is daily exposed for sale in the market, yet no fish stalls have been erected. Their omission is a mistake. This bazaar has no water supply.

6. One or two meat stalls also should be erected. Cattle are very seldom slaughtered in Sittoung it is true, but a large quantity of venison and other meats are very frequently offered for sale, and there are no suitable stalls for the purpose.

7. (*d.*) WATER SUPPLY.—This is obtained from the river and from wells. My remarks on the water supply of Shwè Gyeen are applicable to the state of things existing here.

8. (*e.*) COURT HOUSE.—Clean.

9. (*f.*) PUBLIC LATRINES.—There are none. The subject should receive attention.

10. (*g.*) PUBLIC HEALTH.—The population is stated to be 7,688. The death and birth rates per 1000 for 1867-68, were 25.80 and 14.10 respectively. A short but serious outbreak of acute Dysentery appeared in this town immediately after the rains, and from all I can learn on the subject, I am satisfied that the disease was due to the use of bad water. At present the town is remarkably healthy.

11 (*h.*) WOOM-BAH-DOW.—The Bazaar was not very clean; the streets also require more attention, and the drains were in bad order. This town has paid municipal taxes for several years. I would suggest that some of the money be spent on its conservancy.

12 (*i.*) KYIEK-Y-THA.—This town was tolerably clean. There is no public bazaar here.

13 (*j.*) KYIEK-HTO.—The main streets of this town were particularly clean. They were in good order and their drainage fall ample and free from dirt. The remainder of the town evidently is not so well looked after. Considerable rubbish was noticed under the houses, and the drains were not clear. Some of the houses are well built.

14. The Bazaar was clean, but required repairs. The temporary stalls erected at one side of it are unsuitable. They cannot be kept clean and endanger the principal building to fire. If the institution is not adequate to the requirements of the place, it should be added to in a proper manner. I could not discover any fish stalls in this bazaar.

15. The water supply is bad—it is bad everywhere. In Kyiek-hto, however I must admit, that one or two of the wells situated in the laterite soil contain good water.

16. (*k.*) KIN-YOOAH.—Clean and in nice order.

17. I found the public health to be good in all these towns.

18. After what I have seen on the Irrawaddy and in other parts of Burma, I must say that I was more than agreeably surprised with the general very cleanly state of all the large towns in this division of the country. It is true that many of these towns are built on a laterite soil possessing advantages not met with in the alluvial plains. Such as good metalling for roads, ample drainage fall, and good water in the higher and pure strata. That officers stationed in the Sittoung valley take a greater interest in the welfare of the people committed to their charge, than their fellow labourers in other parts of British Burma, I cannot believe, yet the fact remains that the villages and towns on the Irrawaddy, in a sanitary point of view, compare very badly with those on the Sittoung.

19. (*l.*) BUNDS.—The Sittoung valley is funnel shaped with its apex near our frontier above Toungoo, and from thence to the opening of the valley to the sea, near Kyazoo, is to be seen a vast, rich alluvial formation many feet deep and many square miles in extent. Through this flows in a most tortuous manner, the river of the same name, and while but two or three hundred yards wide only at Toungoo it measures two to three miles at Kyazoo. In the rains this river floods its banks very generally throughout its whole length, but no where does it do so to any great depth. The population of the valley is exceedingly sparse, and regular and safe communication with a sea port town or market there is none.

20. To the passing traveller who rides over this roadless country, the valley appears destitute of inhabitants. Agriculture is the occupation of the majority of the small population on the river banks, in its northern portion, and everywhere this cultivation is carried on in a small scale, and is exceedingly precarious. The value of the crops may be enhanced by the deposits of silt left by the floods if of short duration; while on the other hand, a continued high rise of the river may drown the young plants and a whole season's labour is lost. This year about one third of the entire cereal crops of the valley were thus destroyed. In the southern part of the country the people are chiefly occupied in the manufacture of salt and ngapee.

21. That such extensive tracts of good land remain uncultivated, arises in great part from the want of good roads, and easy and safe water communication with Rangoon and Maulmain.

22. But something more than this is required before a population will settle and develop the natural resources of the valley. The river must be confined within reasonable limits by the construction of permanent embankments.

23. The rise and fall of the Sittoung river depends solely upon the amount of the rainfall of the country. It receives into its channel no water from the sudden meltings of snow on the heights of Himalaya or any other mountains. Hence it follows that its highest possible flood level can precisely be laid down.

24. The dangers therefore to which the bunds on the Irrawaddy are exposed can never occurhere. That river is subject to exceeding high rises quite independent of the rain-fall of Burma. How often its course may have been changed by the slow descent of glaciers or the sudden rush of avalanches, the accumulations of years, into the valleys of its head waters, and there rapidly melting, it would be impossible to say, nor have we any sufficient grounds for assuming that it shall not happen again. We have on the contrary, precedents enough in other countries in its favor. I do not intend to discuss the other differences between the two rivers, though it would be interesting to pursue such an enqulry, nor do I intend to discuss how far my comparisons are correct. I simply content myself with pointing out the importance of bunding the Sittoung, which to me, appears a very easy matter, and leaving the rest for our Engineers to consider.

25 .(*m.*) PYNE-KHYOUNG CREEK.—This creek used to dry up in the N. E. Monsoon, but within the past few years a very shallow canal has been dug whereby it is possible during the high spring tides to push through it. The former made it necessary to travel by land between the Pegu and Sittoung rivers during the dry season. The latter seems to have been undertaken rather that its claims should rest as far as possible on the subsequent washings which the high tides in the Sittoung might affect in deepening the shallow cutting without reference to the causes which gave occasion for that cutting to be made.

26. If the consequences had been calculated ever so roughly, it must have been seen that the silting power of both rivers would have the precise effect, it was particularly desirous to avoid producing. As it is these rivers have shown that their tendency to deposit mud is unchanged, and that we have simply been fighting against nature.

27. Well, the cutting has been made, and by so doing it has secured a partial and temporary advantage over the land route, at a cost of a vast sum of money, a route which can never be maintained without a continued and heavy expenditure and one not by any means capable of fulfilling the advantages it is hoped would be gained.

28. The difficulties incurred with the bore in the Sittoung have not been overcome by the operation in this quarter and certainly are not likely to be.

29. Our great object in forming a canal in this direction, is to escape the dangers attendant on the bore in the Sittoung river and to ensure at all seasons a constant and safe communication with Rangoon. This the Pyne-Khyoung creek cutting has certainly not succeeded in establishing. It is necessary therefore to select a better route which shall fully meet these objects.

30. By opening up a good canal here the communication between the two valleys will be most remarkably facilitated. It would be difficult to exaggerate the importance of this fact. But there is more to be considered than this. We must remember that the absence of a safe outlet to the Sittoung valley has kept it in a backward state,—and it comprises a tract of country equal in extent to about one fifth of the entire area of British Burma and that politically as well as commercially it is of vast importance.

31. It may be of course that these points have been examined before, and that the gentleman who planned the cutting was the best judge of the most suitable route which that cutting should take. It may be that the river Sittoung was thought capable of undoing what it had taken ages to accomplish, namely the silting up of the shallow between the two rivers. It may be that the measures to open up a canal in this place were based on sound principles, all these suppositions are quite possible, but it must be confessed that they are all far from probable.

32. Several routes might be suggested for such a canal and the best has yet to be ascertained. There are not many men who have the gift of discovering the natural features of a country through which they may travel, and who are capable of turning such knowledge to account. An Officer of this Commission however has done so. He has submitted a proposal—a remarkably good one, and one deserving attentive consideration. He proposes to join the Pagain Creek which is a navigable affluent of the Sittoung with the Kalee Creek just above where it enters the Pegu river, and between which there is all but unbroken communication by water.

33. The advantages of a canal in this position are these, that leaving the Sittoung a little below Shwè-Gyeen where that river is most navigable and safe, it escapes almost altogether the influence of the tide and therefore the bore; that it shortens the distance, whereby the saving of time would be very great, and that, in addition, and which is perhaps the most important point, it would always contain ample water.

34. Again—that there are no serious engineering difficulties to contend with is sufficiently apparent from the flat alluvial nature of the country. The only one which, in the absence of a regular survey, it is impossible to express any decided opinion upon is, the fall per mile. Should this really be found to be too great, locks as in America would have to be constructed, but I anticipate nothing of the kind.

35. I am very far from supposing that a canal alone is all that could be wished to open up the communication between the two rivers, and to supplement this canal by a road would be a very simple matter.

36. This route then effectually escapes the difficulties, and dangers of the present passage, and if it is not the best route, it is a first rate idea, and a route in this direction is better than no route at all, at any rate it is a thousand times more sensible and as practicable as the Pyne-khyoung creek cutting.

37. The evils inseparable from this latter route, which require such extraordinary precautions and vexatious delays to ensure a certain and safe passage are not certainly overcome until they are rendered physically impossible. The utmost care of the authorities could not bring about such security unless some convulsion of nature should take place in which the tide with its bore might disappear altogether

38. Bund the river and establish safe and constant communication between this valley and Rangoon and a population will settle and cultivate the soil. Without a sea port easy of access the Sittoung valley, however much we may improve it will remain as now, without inhabitants.

39. A country cannot be healthy, unless it is drained and cultivated and to this end good roads and a permanent water way are absolutely necessary.

40. I have experienced the difficulties and dangers of travelling between the Sittoung and Pegu rivers, both before and after the cutting of what is now called the Pyne-khyoung canal. I believe it is possible and highly desirable to supplant this canal by a better one—one which, if constructed with judgment, shall prove a complete success in every respect, and if I have in recording this belief, over-stepped the limits of my office, I offer as my excuse, the importance of the subject in a Sanitary point of view.

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# SANITARY INSPECTION REPORT

## MAULMAIN

*Rangoon, 10th January* 1869.

TOWN.—The appointment of Health Officer for the town of Maulmain lapsed nearly two years ago—the municipal funds being insufficient to meet the salary of such an officer. The Civil Surgeon is however Sanitary Officer of the station, and he will furnish an Annual Sanitary Report at the expiration of the present official year. Beyond, therefore, noting certain points which I think ought to receive immediate attention, I have not thought it advisable on this occasion to anticipate any remarks he may wish to make, on the existing condition of the town and its public institutions.

2. The prisoners formerly allowed for conservancy purposes are no longer permitted to be employed on such duties. Maulmain consequently possesses no Health Officer or Conservancy Establishment, and in their absence it is needless to say, that the town is in a most dirty condition.

3. The Slaughter House was clean within, but the drainage round about the north side of it was filthy and offensive. I saw at the time of my inspection a number of pigs lying about the building. The manner in which these animals were fed was suspicious. Their proximity to the offal was to say the least significant. I therefore addressed the Magistrate on the subject—vide copy of letter attached, marked A.

4. The Bazaars in Maulmain are filthily kept. Fish are regularly killed, entrailed and cut up on the common wooden floors—the refuse and offal being scattered about in all directions. The meat (Butchers) is sold under equally disgusting conditions.

5. No meat or fish stalls have been provided in any of the Bazaars and I am informed that the articles have been treated in the same way as I have described, and on the same spots, ever since the buildings were erected. I addressed the Magistrate on the subject of these Bazaars, vide copy of letter attached marked. B.

6. Some of the floors of the Bazaars are so near to the ground that to clean underneath them is an impossibility, and never has been attempted. In one instance where several holes and loose boards existed, I saw bones and the refuse chips of meat &c. ,being pushed through them. There are no local rules for the proper management of the Bazaars in Maulmain, vide extract of Magistrate's letter attached marked. C.

7. In the Dyne-Woon-Quin quarter at the back of some of the squares there are several tanks surrounded by outhouses and privies. The tanks should be closed. To me it is strange that such a nasty state of things should have been permitted to continue for so long and under the very noses too of the Health Officer and other authorities.

8. The Commissioner informed me that steps were being taken to purchase a site for new grave yards when all sepulture within Municipal limits, would be prohibited as far as the native population is concerned. As the subject has now occupied some considerable time, I hope no further delay will be permitted in carrying out the proposed plan.

9. I visited the Gaol, viewed the prisoners and made myself thoroughly acquainted with the working of the establishment in all its branches. Although it is not a part of my office to report on the Sanitary state of our Gaols I beg to record here that, I was exceedingly pleased with the healthy and cleanly appearance of the convicts, and the excellent sanitary arrangements which have been introduced by Dr. Donnelly the Superintendent.

10. The prisoners diet was ample and well cooked, and I was delighted to learn that so great an improvement had

been made in this respect. Dr. Donnelly agrees with me that the vast change for the better which has taken place in the health of this Gaol is attributable to the better feeding of the prisoners. The natives of India no longer die in large numbers. They live and thrive quite as well as their free countrymen do and always have done in Maulmain.

11. The Latrine is worked on the dry earth system to perfection. I introduced the Rev. Mr. Moule's system into our Gaols and being a thorough judge of its proper management I was unable to point out the smallest fault here.

12. I also visited the Gaol Gardens. Nitrogenous vegetables are grown to perfection and in abundance. To this class of wholesome and nourishing food Dr. Donnelly pays great attention. He coincides with me in opinion, after a large experience in this country that without such food in considerable quantity, the Burmese quickly sicken, and no matter by what name the fatal termination may be called, die.

13. So long as Dr. Donnelly is in charge of a Gaol in British Burma there is little fear of the prisoners being attacked and dying from starvation fever.

14. There are many towns in British Burma which possess no municipal funds but which nevertheless are well kept and are a credit to those in charge. Perhaps an interest in the country and people and persuasion are the means employed to bring about such happy results. I do not mean to infer by this, that a due interest in the welfare of the people of Maulmain is not felt by all the authorities there, but I do mean it to be understood that my experience teaches me great sanitary benefits can be conferred on a community in the absence of actual municipal funds.

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From A. J. Cowie, Esquire Sanitary Commissioner, British Burma, to the Magistrate of Maulmain No. 77 A. Circuit House, 24th December 1868.

I visited the Slaughter House this morning. The stench was most horrible from the practise of throwing the blood &c. into a pond close by. This should not be.

The Slaughter House was clean itself, but there were several pigs lying about it. Please to make a practice of feeding

pigs on offal an impossibility by prohibiting their being kept in the vicinity of the Slaughter house.

———000———

From A. J. COWIE, Esquire Sanitary Commissioner, British Burma, to the Magistrate of Maulmain No. 76 B. Circuit House, 24th December 1868.

Both meat and fish are sold under the most unwholesome conditions in the Bazaar in the Obo or Dine-woon-quin quarter of the town. The meat is simply cut up on old wooden tables which must be saturated with decomposing animal juices.

The fish are killed entrailed and cut up on the wooden floors.

All meat and fish stalls should be properly paved with stone or tiles well laid in cement on a good slope, and an ample supply of water should be continually at hand for cleansing purposes.

The floors of the Bazaars are of wood and are built too near the ground. The filth underneath them must be horrible in the extreme; as there is no possible access to remove accumulations.

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From Captain W. W. PEMBERTON-Magistrate of Maulmain, to Sanitary Commissioner for British Burma, No. 15 C. dated Maulmain 5th February 1869.

EXTRACT.

"I further beg to state there are no Government Bazaars, nor rules, for management of the private Bazaars in the Town."

# SANITARY INSPECTION REPORT.

## TAVOY AND MERGUI.

*Rangoon 1st February* 1869.

### I TAVOY.

(*a.*) Town.
(*b.*) Drainage.
(*c.*) Water Supply.
(*d.*) Bazaars.
(*e.*) Court Houses.
(*f.*) Police Tannahs.
(*g.*) Public Latrines.
(*h.*) Trees and Jungle.
(*i.*) Public Health.

1. (*a.*) TOWN.—This was clean and the roads were in good order. It is well laid out.

2. (*b.*) DRAINAGE :—A large part of the Town is barely above high spring tides. This is chiefly the case in its southern portion. The drains generally have sufficient fall at low water, however, in my opinion, provided that, they are kept free from vegetation, which certainly was not the case at the time of my visit.

3. (*c.*) WATER SUPPLY :—This is in great part obtained from wells. In several instances I found wells very inadequately protected. A good parapet wall with a sloping bricked platform should be provided around each. Again, circular drains are also necessary to carry off waste water. Some wells in the town are situated in overcrowded places and contain bad water. Laterite soil crops up to the rear of the town and I believe good water could be found in it if properly sought for. Wells of undoubted impurity should be filled. Norton's tube wells would answer in Tavoy.

4. (*d.*) BAZAAR:—The Government Bazaar is a miserable institution. It consists of several open sheds, with mud floors, and at the time of my visit—2 P. M., it was empty. The place was clean certainly, but why deserted? I inspect-

ed the private Bazaar,—a wretched collection of sheds, overcrowded and disgracefully dirty,—at about 3 P. M., and it was well stocked and crowded with people. To the rear of this Bazaar the refuse and daily sweepings would appear to be thrown and there left to rot—a very bad practise.

5. There are no meat stalls in either Bazaar. Fish stalls are also absent. Moreover there is no water supply.

6. A good Government Bazaar is much required in this town.

7. (*e.*) COURT HOUSES.—Clean and in good order.

8. POLICE TANNAHS.—Clean and tidy.

9. PUBLIC LATRINES. They require better supervision and should be placed at a distance from the town.

10. (*f.*) TREES AND JUNGLE.—The late Civil Surgeon suggested in his last Annual Report that some of the trees in the town should be cut down. This I decidedly decline to recommend. The low jungle however in private compounds and round about suburban allotments might be cleared away with much benefit to the Public Health.

11. PUBLIC HEALTH.—Good. Tavoy is a healthy town. There was no serious sickness present of any kind among the people.

## II. MERGUI.

(*a.*) Town.
(*b.*) Drainage.
(*c.*) Roads.
(*d.*) Water supply.
(*e.*) Bazaar.
(*f.*) Court Houses.
(*g.*) Police Tannahs.
(*h.*) Public Latrines.
(*i.*) Overcrowding.
(*j.*) Jungle.
(*k.*) Lake.
(*l.*) Public Health.
(*m.*) Town of Tenasserim.

1. (*a.*)—TOWN. This is well laid out and very clean. Towards the South near the tidal creek which runs through this quarter of the town, I thought the houses rather too much crowded together. This quarter also was not so clean as I should like to have seen it, but as timber enters the town in this direction, and is cut up as soon as landed, much of the untidiness I noticed may very possibly be due to this cause and is therefore unavoidable.

2. (*b.*)—DRAINAGE.—Good. Captain Shepherd in the absence of masonry has revetted some of the chief drains with wood. Sanction should be given to substitute this temporary work with stone or brick.

3. (*c.*) ROADS.—In excellent order.

4. (*d.*)—WATER SUPPLY.—This is obtained from wells, some of which are certainly within the influence of the tides and consequently brackish. Good water is obtainable in the higher laterite soil, and good wells might be sunk for the purpose. I would recommend the filling in of all brackish wells.

5. Through the South of the town a stream of good water constantly flows, which comes down from a spring, at some distance up the hill side. This might possibly be diverted to a good purpose instead of as now being permitted to run to waste.

6. (*e.*)—BAZAAR.—The Government bazaar is a new building. It is situated on a raised embankment on the sea shore. It was clean. It is not provided with meat stalls. Fish is sold here in large quantities yet no stalls for this aritcle of food have been erected.

7. Captain Shepherd has protected the bazaar against fire by planting numerous evergreen trees between it and the town. He has also successfully removed some goodly sized trees to this locality and they are thriving admirably.

8. (*f.*) COURT HOUSES.—Clean and tidy.

9. (*g.*) POLICE TANNAHS.—Clean and in good order.

10. (*h.*) PUBLIC LATRINES.—These are in good order and well situated over the tides.

11. (*i.*) OVERCROWDING.—The houses over the beach are far too much crowded together. They are moreover in my opinion exposed to the serious danger of being swept away by

any sudden rise of the sea—a storm wave for instance. I would recommend the beach being kept quite clear of buildings.

12. (*j.*) JUNGLE.—I noticed some plantations too near to the town which might be cleared with benefit to the public health.

13. (*k.*) LAKE.—There is a large sheet of water bunded in the north of the town, at a very much higher level than the latter. The bund burst last year and had it not been for the timely repairs made to it by Captain Shepherd, the destruction of property and loss of life might have been very great. The water is not required or made use of by the people. I would therefore recommend that Captain Shepherd's suggestion be carried out. He proposes to drain the water off and place the land which is good under cultivation.

14. (*l.*) PUBLIC HEALTH :—Good.

15. (*m.*) TOWN OF TENASSERIM :—This is situated on the river of the same name a few miles north of Mergui. The people are very unhealthy, and suffer greatly from fever and enlargement of the spleen. Dysentery also is not uncommon. I am of opinion that the sickness of this town is occasioned by the people drinking the river water, which is highly charged with vegetable matter and other impurities brought down with it from the dense jungles to the east. There is not a single well in the whole of this town. Norton's tube wells should be tried here as soon as possible. The soil soft. They are therefore almost sure to prove successful.

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## MAULMAIN SANITARY INSPECTION REPORT. *Contd.*

### CHOLERA ON THE SALWEEN,

I arrived in Maulmain on the 5th of December 1868, and meeting Colonel Ryan, the Commissioner, in the town, I learned from him that Cholera had appeared at a place called Hpa-gat on the Salween river, and that 17 persons had already succumbed to the disease. No further time was lost than that taken up in removing my traps to a boat, which was at once procured for me when I proceeded to render assistance on the spot.

2. I reached Thoyne at 11 P. M., a village 25 miles north of Maulmain and 6 south of Hpa-gat. There I found Cholera present. Several persons had been attacked of whom three died. I visited the sick, prescribed medicines, and gave the Thoogyee, Moung Bhau, the fullest instructions how to place his town in the best possible sanitary condition. I also left medicines in his hands with full instructions for use.

3. I now proceeded to Hpa-gat, where I arrived at about 11 a. m., on the 6th. Here Cholera had, as reported, carried off 17 persons, but the town was again free from the disease. The place was dirty. I remonstrated with the Myooke, and he promised to improve its condition, and before leaving I gave him a supply of medicines for distribution should any fresh cases occur.

4. From this station in the direction of Menzai, 60 miles north of Maulmain, I called at each village on the banks of the river. The villages here were in a cleanly state and well kept. Phau was particularly tidy. The Deputy Commissioner, Captain Horace Browne, had made many improvements in it, among the most noticeable, being a good and well raised road with deep and lateral drainage extending through the centre of the town.

5. Finding the Public Health good and no word of cholera in this direction, I returned to Thoyne, and personally superintended the sanitary operations, which I had set on foot to mitigate and stay if possible the further spread of the epidemic.

6. A letter which I addressed to Colonel Ryan, from this village on the night of my arrival had reached its destination and a fresh supply of medicines had been promptly forwarded.

7. I found all my patients doing well. The Thoogyee and the people entered with a will into my views and all that I recommended was faithfully attended to.

8. Thoyne is an exceedingly pretty village, situated on the left bank of the Salween, and contains about one hundred houses. It is nicely laid out in its southern portion and is shaded by a number of fine trees. To the north it is subject to inundations from the overflowing of the Salween, and is rather crowded in some places, owing to the broken nature

of the ground, and was not so clean as the remainder of the town. Here Cholera had found a resting place.

9. To check its spread and to render aid to those suffering from the disease were my first objects. The village is divided in its centre by some gardens and as the southern half had as yet escaped the Epidemic, I hoped by this fortuitous separation to keep it free. My endeavours were successful.

10. I explained the following measures to the people and they did their best to carry them out.

A.—That no one should drink the river water, good water in abundance being procurable to the East of the town.

B.—That houses in which Cholera had appeared should be vacated for the present, and fumigated with wood smoke.

C.—That the dead should be buried at once, and all soiled clothes burnt.

D.—That all privies should be covered with dry earth daily, and jungle cleared away.

E.—That all should apply for medicines who might be affected with Diarrhœa. For this purpose, I supplied each quarter of the town with medicines and superintended the administration myself.

F.—That all rubbish should be regularly swept up and burnt.

G.—That communication as far as possible should be stopped between the two portions of the village.

H.—That all should refrain from eating raw and indigestible food.

11. These suggestions were heartily followed. All were most anxious to do anything reasonable to rid themselves of the presence of this terrible disease. So much good had resulted from the measures which I had in the first instance recommended, and the disease seemed to have received so decided a check that the people placed confidence in me, and I had only to express a wish when it was immediately complied with. I was surrounded daily for medicines, every one believing that I had infallible remedies for all the ills flesh is heir to. I was even requested to write to the Commissioner and beg that an order might be issued to prevent

strangers entering the village until the Cholera had entirely disappeared. This of course could not be done, and I only mention the subject to shew how thoroughly the people believed in the communicability of the disease from one to another, and appreciated the good which must result from isolation.

12. I remained at Thoyne and conducted carefully all medical and sanitary matters. Cholera soon ceased.

13. The subsidence of an outbreak of cholera so quickly as in this instance at Thoyne, might be looked upon as accidental—a freak of the disease. Some might say that all the cases were sporadic, and I have no doubt that a hundred and one other things might be said to prove that the disease was not cholera at all. These however are idle speculations. It was well known that Cholera had visited several villages in the Kareen Hills and its advent was looked for in some of our Southern towns. The disease in Burma usually travelling in a southerly direction. Cholera reached Hpa-gat in December, a dirty town and destroyed some 17 persons in a few days. It then crossed the river to Thoyne and would have established itself there but for the active measures which I set on foot and which left no spot favourable for its propagation.

13½. It is impossible to say to what extent the disease might not have extended, under the fostering care of an opposite condition of things. Suffice it to say that the disease was Cholera, and sufficiently fatal to please the most incredulous, as far as it was permitted to go. Yet the outbreak it must be admitted was a mild one, although this was not I believe attributable to any change in type, but to the general very cleanly state of the villages in this valley, which afforded no favourable insanitary conditions for its development in a severer form.

14. It would be too much to presume that the course pursued by me stamped out the disease: Still the coincidence of its disappearance with the adoption of those sanitary measures is remarkable, and encouraging enough to justify a repetition of the experiment wherever Cholera may again shew itself.

15. Having satisfied myself that there was nothing further to be done at Thoyne, I returned to Maulmain, visiting

the following villages on the journey, and supplying medicines where I thought they were required.

| RIGHT BANK OF THE RIVER. | LEFT BANK OF THE RIVER. |
|---|---|
| Myoungalay. | Phingatha. |
| Magee-gune. | Yooak-Thoe. |
| Than Phan-Nga-Go. | Thau-tha-Pying. |
| Mhabee. | Kadoe. |
| Tuey-gham, | |
| Moke-ta-mah. | |
| (or Mah-ta-ban.) | |

16. I found no Cholera south of Thoyne. The towns and villages on the Salween, with the exception of Hpa-gat and Kadoe were clean and well kept. The water supply however in all requires improvement. The system of latrines also is bad.

17. Wherever I went, on discovery being made that I was a medical man the people literally besieged me for advice and relief. This exhibition of faith in the superiority of European medicine over their own superstitious native treatment, is by no means confined to those living in the valley of the Salween. On the Irrawaddy and Sittoung rivers far away from Government General Dispensaries and European help, the afflicted are equally solicitous in this respect. The opportunities afforded me in my constant travels of doing real good should be taken advantage of. As yet I have carried medicines with me, provided at my own expense, but I think that the Administration might with profit allow me a medicine chest. The cost would be trifling and weigh lightly in the balance against the good I might thereby be enabled to effect and the lives, which again and again I have the chance of saving to the State. I trust therefore that the Chief Commissioner will sanction this request, and as a medicine chest of convenient size and appropriate to the work is not obtainable at the Government medical stores in Rangoon, if approved of, I further solicit the permission to order a small Dispensary of suitable design, at one of the Medical Halls in Rangoon, and charge the amount in my Contingent Bill.

18. My best thanks are due to Colonel Ryan, the Commissioner of Tenasserim, for the very great assistance and support which he gave me throughout my tour on this occasion.

19. To the active co-operation of Moung Bhau, the Thoogyee of Thoyne and to the general good sense of the people, must be attributed the success of my mission against the Cholera outbreak on the Salween.

20. Too much praise cannot be given to the officers who superintend sanitary matters in this Division.

21. All officers should be directed to furnish me with the dates of appearance and disappearance of Epidemic in their respective districts. The total number of deaths in each village with strength of population should also be given. This information is absolutely necessary to enable me to compile my annual Cholera and other maps.

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From A. J. Cowie, Esquire Sanitary Commissioner, for British Burma, to the Civil Surgeon, Rangoon. No. 60 dated, Rangoon, 8th November 1868.

Will you oblige me with your opinion regarding the nature of the fever, mentioned in my letter, No. 51 of the 5th September 1868, to your address. I would also feel thankful if you would forward me a copy of any letters you may have addressed to the Magistrate on the subject.

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From A. J. Cowie, Esquire to the Civil Surgeon and Health Officer of Rangoon, No. 54 Dated Rangoon, 21st September 1868.

I see by the Magistrate's returns of Deaths in the Town and Suburbs of Rangoon for last month, that a very large number of persons have died from fever. The total deaths far exceed the total births in the same period.

2. I have the honour to request that you will favor me with any information you can gather, as to the nature of this fever, which I fear is contagious.

3. Sometime ago the Yambonquin, Botatoung and Poozoondoung quarters were visited by a fever of a low type, which to me resembled "relapsing fever" and appeared to be the result of overcrowding and filth. Probably the present increasing death rate is caused by the same disease.

4. I am on the eve of my departure for Toungoo; I trust therefore in my absence you will bring prominently to the notice of the Local Government, all Sanitary measures necessary to be effected to stay the further spread of this fever, of whatever nature it may be, in those quarters in which it is now so prevalent and fatal.

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From J. J. HEFFERNAN, Esquire, Civil Surgeon to A. J. COWIE, Esq., Sanitary Commissioner, British Burma, No. 118 Rangoon, dated 11th November 1868.

With reference to your letter No. 60 of the 8th instant, I have the honour to inform you that I have visited the localities where fevers have been so prevalent for months past, I found the Sanitary arrangements most defective, in fact none existed, and the people seemed thoroughly ignorant of the common principles of sanitation! I pointed this out to the Authorities more than once in my monthly Report that accompanies the Register of Births and Deaths but nothing seems to have been done in the matter. The Magistrate informs me that the localities under consideration are beyond the jurisdiction of the Conservancy Officers.

The type of the Fever was of a Typhoid Remittent character.

# DISTRICT HEALTH OFFICERS' REPORTS

# HEALTH REPORT AKYAB.

**During the year 1868.**

As I was not in the station in 1868, it is somewhat difficult to report in detail on the Health of the place

From inquiries made it seems that a few cases of Sporadic Cholera occurred.

Dysentery and Diarrhœa were common during the rainy season, and are said to have proved rather intractable. In former days when in Medical charge of this station, I always found these wanderings from health yield, if treated as varieties of Fever.

Fever, as manifested under the signs and symptoms, to which the term fever is at the present day restricted, was of course prevalent. That departure from health, whose characteristics are cold, heat and sweat attended by recognizable periodicity, is always present in Akyab.

Venereal Disease was almost universal among the prostitutes. If some means could be enforced to compel such women to discontinue their trade, whilst suffering from certain disorders, a great benefit would be conferred on the heedless Sailors who frequent this port. In November the station was visited by a very destructive Cyclone. No immediate injury to the public health followed at once in its footsteps. A complete report on the Cyclone was published by the Commissioner of Arakan.

Great numbers of fine trees—the ornaments of the station, were blown down by the hurricane. These trees were originally planted by the Great Commissioner Sir Archibald Bogle.

W. J. MOUNTJOY.

*Civil Surgeon and Health Officer Akyab.*

# ANNUAL HEALTH REPORT -KYOUK-PHYOO.

## For the Year 1868.

Measles.

Taking into account the past year as having been extremely healthy throughout its different seasons, I have not much to dwell upon, except that a slight visitation of Measles in the Island of Cheduba, which was noticed in August last; and on application immediate means were adopted to send medical assistance to the Myooke of that place—happily no casualties from the disease took place.

Cholera and Small Pox.

We have had a few cases of small pox as also of cholera, but they were of short duration and purely of a sporadic character.

Epidemic.

No epidemic of any sort this year.

Cattle Disease.

In October last a few cases of deaths took place among Buffaloes in the neighbourhood of the old salt Golahs, when immediate steps were adopted to separate all the affected from the healthy brutes, and every other necessary precaution taken to prevent extension or spread of the disease. This is the first time that we have had any thing like an outbreak of cattle disease in this part of the country. It affords me infinite pleasure to say that it was not marked by that malignancy as in the neighbourhood of Akyab or in other parts of British Burma.

Municipal arrangements.

The Town of Kyouk Phyoo is very carefully attended to, and its Municipal arrangements are carried out by the people themselves under proper advice and suggestions of the authorities, and I have not the least doubt that if the same state of things continue, I shall always have a clean bill of Health to show in all my future reports.

Public Latrines.

I regret extremely in not having in my last year's report on Public Health made any mention of the existence of Public Latrines in the Town of Kyouk Phyoo, the simple reason of the omission was the fact of my having had some years back (in 1864) brought the subject prominently before the Sanitary Commissioner.

We have no Public Latrines in the Town of Kyouk Phyoo.

ALEX. THOMAS.
*Medical Officer Kyouk-Phyoo.*

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# SANITARY REPORT—KYOUK-PHYOO.

**For the Year 1868.**

1. TOPOGRAPHICAL DESCRIPTION OF THE STATION AND DISTRICT GENERALLY.

The town of Kyouk Phyoo is situated in Lat: 19°-26′-017″ and Longitude 93°-34′-38.8″. It is bounded on the South by a creek called Gnathan Kay Khoung and a low range of hills. On the North by the Kyouk Phyoo river, on the East by the salt Golah creek or Nalapoy Khoung and on the West by the hill called Toungseng. The Civil station of Kyouk Phyoo was once a port where the Marine as also the Military Departments were located; but within the last few years the Head Quarters have been shifted to Akyab and just now we have a Deputy Commissioner in charge, a Medical officer with establishment, a Police consisting of two European Officers and a number of Native Inspectors with a staff of Constables. We have also a Government school, two Hospitals, a Charitable Dispensary and a large commodious well kept Gaol. With regard to its present condition and prospects, I cannot do better than quote the words of our late Deputy Commissioner in his Revenue Report for 1867-68. viz., "that, it is unlikely that this town of "Kyouk Phyoo will ever increase in "prosperity. It has gradually gone *down hill* since the with-"drawal of the detachment of Local Battalion, and since Gov-"ernment ceased interference with the manufacture of salt; "and true will these words be proved not only with regard to "the Town of Kyouk Phyoo, but the whole District, if some-"thing is not done to dispel the cloud of "lethargy" which "seems to hang over the District—and the most feasible plan "to obtain such a desirable end is steam communication, par-"ticularly as the port of Kyouk Phyoo possesses a natural "harbour of splendid dimensions, the entrance to which is "buoyed off with great exactness; soundings have been "taken and entered in the Government Charts, noting the

Vide Revenue Report for 1867-68 *in extenso* by Captain Plant.

" depth of water even inside the harbour in which the largest " ship might ride, and is almost in the direct line now taken " by the B. I. S. N. Co's: Steamers in plying from Calcutta " to Maulmain and back." The soil of Kyouk Phyoo is sandy throughout with the exception of a few spots or places whence a bluish marl looking earth is obtained for making pots &c. The hills are one and all composed of sandstones, more porous than compact. Never have I come across any like those splendid specimens of granite of which some of the arches for bridges along the grand trunk road leading to Benares which one meets with close to the river Soane. The harbour of Kyouk Phyoo is sufficiently large to permit the entrance into it of vessels of heavy tonnage, and during the last Burman war, I have seen the "Feroze" and the late "Mozuffer" as also several others frequently lying within a few yards of the Kyouk Phyoo Wharf. The breadth of the river of Kyouk Phyoo in a direct line on triangulation is found to be 2¼ miles across. The indications are ample to show, that the station of Kyouk Phyoo is under the influence of volcanic phenomena; and as it is, we are lying within a few hours journey in a South Easterly direction to an active volcano which not many years back, burst forth in all its terrific magnificence, and in its violence tore away large masses of earth in its vicinity; and while the column of fire was shot up, the earth shook and trembled and in various places opened out and threw up a darkish colored semifluid matter of sulphurous odor; the action however was fortunately of no long continuance.

2. NATURE OF CLIMATE AND ATMOSPHERIC PHENOMENA.

The climate of Kyouk Phyoo, as far as I can judge is the best in all Arakan. In the rains however it is necessary for one (particularly a foreigner) to be careful in properly clothing himself; for it is at this time of the year that the atmospheric changes are sudden and generally occurring unexpectedly, bringing about a considerable amount of relaxation of the human system, so that, it is necessary to be more than cautious in observing the rules for maintaining health, as the season is anything but what is termed fresh or bracing.

3. RAINFALL.—To dwell on the subject of rainfall, it is nothing more than to speak of the wet state of things brought

about during the monsoons. The rains come on here with a few showers at the latter part of the month of May generally, and this fall of rain is called in India "Chota Bursath," but here the same thing is called "Mo-Oo" which is very welcome indeed; for it is welcome in two ways :—

1st.—Where everything was hot, sultry and parched, with the grass all scorched up, *now* we have the opposite condition effected, and,

2ndly. Our mangoes and other tropical fruits are ripened, cooled, and made delicious for the table. The setting in of the monsoons here, as in India, is generally marked by the vehement meeting of the elemental furies in the form of thunder, lightning and storm, and the first regularly settled rain commences, I may say, with the beginning of June, moderating about September, enabling the sportsman again to resort to the field for a "Battue" against the early snipes which now come in—in October we have squalls again, as in other parts of India and these go on gradually subsiding, till we approach the cold weather of November, December, January and part of February. The quantity of rain which has fallen for the last five years, I mean the average annual fall is the following:—

1864—18.7.
1865—14.5.
1866—12.5.
1867—13.8.
1868—13.2.

4. Position and Drainage of Town.—The Town is placed with a river towards the North, a creek and a part of the hills to the South, to the East, the salt *Golah* creek or Nalopoy-khoung and on the West a range of low hills. Its drainage is maintained by Kutcha open Drains and are well fitted for the requirements of the inhabitants.

5. Extent of ground occupied by town, roads, description of their positions, number and width generally to show the ventilation in regard to prevailing winds. Average superficial space approximately to each inhabitant of estimated population.—The roads lie N. & S. and East and West, they

are broad and capacious in every way to meet the wants of the inhabitants. There are 30 roads of which 18 are 45 feet in breadth, and 16 of 30 feet and 6 of 15 feet. The ventilation is free and perfect in every respect. Approximately, I may say, each individual enjoys a superficial area of 36.5 Perches, which I think is more than ample for the maintenance of health. Our town is sparsely inhabited. The area of the town is stated to be 650 acres; and within this are said to be resident 2,829 souls in all—the average breadth of the land which forms the town boundaries is about 10-16ths of a mile and the length about 1 11-16ths of a mile.

6. Condition of town, as regards drainage, noting any changes made during the past year.—The town as far as drainage is concerned, is as good as it is possible to be expected from the most rigid municipal arrangements. The changes and improvements that have been made during the past year have been principally in the clearances effected in the strict attention paid to the removal and destruction to all manner of offal or rubbish, and the prevention of the accumulation of the refuse matter from the fishermen's stalls.

7. Ventilation of houses.—With regard to the houses, I mean with reference to Ventilation, they are very lightly but constructed so as to secure, that amount of ventilation which is enough for the health and happiness of the occupants.

8. Overcrowding.—There is no overcrowding.

9. Conservancy.—The conservancy is maintained by each owner of the house under proper suggestion and advice and is in keeping with the strict principles of hygiene.

10. Water supply.—Condition of wells. Ample in every way of late there seems to be growing up among the people a monomaniacal desire to endow each man his part of the Town with a well, thereby to perpetuate the memory of the good deed, so that by this ebullition of their's we have an addition of at least 10 good brick and stone wells added to the number we had before. In consequence all cannot but be rejoiced at the quantity of good, wholesome

water on the very road sides and procurable without a price, with no let or hindrance.

11. General health of inhabitants.—The general health of the inhabitants has been very good.

12. The comparative state of health of the different sections of the community.—The comparative state of health of the different sections of the community I lay down as 12 being the maximum and I have graduated it as follows :—

| | |
|---|---|
| European ... ... ... ... | 8 |
| Eurasian ... ... ... ... | 8 |
| Hindoos and Mussulmen ... ... ... | 9 |
| Burmese and Arakanese ... ... ... | 12 |

13. Epidemic—History and progess of disease.—Date of appearance, noting situation of first cases—Date of cessation—Direction of approach &c. Happily no Epidemic last year.

14. Mortality.—The death rate very low indeed.

15. Endemics.—Nothing to speak of.

16. Success or otherwise of Vaccination—Partially successful.

17. Employment injurious to health.—By no means injurious.

18 The effect of opium smoking or eating Gunja and Bhang on the population are they injurious or otherwise?—Most decidedly and positively injurious.

19. State of the Bazaar.—The stalls are now being finished and when boarded throughout the changes will be most marked.

20. State of the slaughter-house and grave yards.—Both are very good.

21. Sanitary state of Public Institutions.—The School-house and the Circuit Bungalow are in a state of disrepair and unless immediate measures be adopted the roofs will be *non est* this monsoon.

22. Note all recommendations of importance made during the year to the Local Authorities on Sanitary matters.—A. On the subject of an outbreak of cattle disease in the neighbourhood of the town here, I was obliged to call upon the attention of the Magistrate of adopting immediate steps to segregate all affected buffaloes, from those that were free from the disease and every other necessary precaution was given to prevent extension and spread of the disease. B. I was necessitated (in May last) to write to the Magistrate to send for the butcher to be reprimanded for killing beef opposite his house—thereby causing a nuisance in the neighbourhood, the time of the year favoring putrefactive condition to be brought about rapidly.

23. Any additional remarks thought necessary.—None whatever.

ALEX: THOMAS.
*Medical Officer, Kyouk Phyoo.*

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# HEALTH REPORT—SANDOWAY

## For 1868.

From J. K. MACRAE, Esq., Officiating Deputy Commissioner, Sandoway, to the Sanitary Commissioner for British Burma, Rangoon, dated Sandoway, the 24th April 1869.

I have the honor to forward in original the Annual Sanitary Report on this Station by Dr Pyster, Civil Medical Officer.:—

1st. The town of Sandoway is situated on the left bank of the river of that name, about 15 miles from its mouth, and about 18 feet above the level of the stream, in the dry weather; the greater part of the town is on the plain but towards the south end is a piece of elevated table land, which almost abuts upon the river, and on the edge of which next to the river some portion of the town is built, including the Charitable Dispensary; the rest of this table land which is in extent about ¾th of a mile and 40 feet high is unoccupied at pres-

ent, it formerly formed, I believe, the site of the lines of the Arakan Battalion ; the main street extends for nearly a mile along the river's bank and between the extreme N. E. end (the European Quarter containing the public buildings) and the piece of table land above alluded to are a few cross streets; behind these are the Bazaar and the Gaol, the latter about 600 yards back, westward from the river's bank.

The main street passes in a South westerly direction between the river and the table land which in this place forms a steep bank ; owing to the encroachments of the river on the one side of the road, and the steepness of the bank on the other, the houses here are few in number but when the table land ceases and the plain opens out again at the south end there are some 40 or 50 more buildings. The Sandoway river can hardly be said to be navigable, the influence of the tide is felt for some miles above the town and boats can come up at high water, but when the tide is out it is not knee deep in many places, in front of the town the river forms a basin about eight or ten feet deep; the water at this time of the year is brackish but during the rains the river is subject to violent and sudden floods, which cause it to overflow its banks, inundate the town to a depth of some feet, these floods however do not last generally more than a day or two. The town is surrounded and almost enclosed at a distance of two or three miles by ranges of low hills covered with jungle, the height of these ranges varies from 3 to 5 hundred feet ; and although 15 miles from the mouth of the river, the town is only about five miles from the sea in a direct line, so near indeed that the beating of the surf upon the shore is distinctly audible and the influence of the sea breeze felt, a well made road leads from the Station to the sea beach at the village of Napalee where there is a Bungalow to which invalids can resort for change of air if necessary.

With regard to the District of Sandoway generally it may be said to be hilly but not mountainous, with few plains of any extent. The ridge of the Yoe Mah Mountains forms the boundary between this District and Pegu, this range is at Sandoway about 25 miles from the coast, the intermediate space being a mass of hills ; on the banks of the rivers which run down from the Yoe Mah range to the sea through vallies which are never of any breadth is a little cultivatable land,

generally a light loam, on which where subject to periodical inundations of the rivers Tobacco is raised, and Paddy in the parts more removed from the rivers banks and not enriched by their overflow.

In the Northern part of the District bordering on the Ramree estuary an extensive alluvial delta has been formed by the joint action of several large rivers, this is at present covered with dense jungle, but is capable of being converted into a rich rice bearing tract.

The prevailing rocks are, in the North and centre a close grained brown coloured sand stone, in the South black gneiss.

The present boundaries of the District are, on the East, the Yoe Mah range; South, the Gwa river separates it from Bassein, North, the Maee river forms, the boundary between this District and the Ramree District, and on the West, the sea and the Ramree estuary form the boundaries.

2. The climate is very wet in the rains;—In the dry weather it is colder in the cold, and hotter in the hot than the Tenasserim Coast;—In January and February dense fogs hang about the hills round the Station but I think these are confined to the course of the rivers and not general throughout the District.

3. The rain fall is stated by the Medical Officer to average 225 inches.

4. The town being situated along the bank of the river and being in no place at any great distance from it there is no difficulty in causing the surface water to run off into the stream and the soil is light and porous.

5. The whole area occupied by the town is rather less than a square mile in extent. One long road commencing at the North end or European quarter runs along the river's bank; along one third of this road there are houses on both sides, then the houses cease on the side next to the river, and further on there are no houses on either hand; then toward the end there are a few houses on the right hand or side further removed from the river.

There are two other roads running parallel to this main road commencing at the European quarter, they are only built on for 5 or 6 hundred yards in such order as to entitle

them to name of streets. In this part they are connected with two or three cross streets. This part is the centre of the town, behind it are the Bazaar and Gaol.

These two parallel streets then run on Southerly and ascend the hills or table land mentioned in the 1st Paragraph, where is situated the Charitable Dispensary, the Phoongyee Kyoungs and a few detached dwellings, principally those of Natives of India.

A road runs back from the Bazaar with houses in gardens.

The streets are narrow, 22 feet would in a large town be quite insufficient for ventilation; here they are ample. The houses are low and do not shut out the breeze, and the space occupied by each inhabitant as shown by the Medical Officer must surely satisfy the requirements of hygiene.

6. The drainage of the town has been well attended to in by gone years; the streets are well drained and have pucka culverts at the principal crossings. No change or improvement was made during the year.

7. The houses are all built of mat and bamboo with open bamboo floors.

8. And are by no means overcrowded.

9. There is no Conservancy Establishment; during the greater part of the year the convicts were allowed to sweep the public parts of the town; now orders have been received prohibiting Extra-mural labour, the people do something towards collecting and burning the leaves and rubbish near their houses, and the Bazaar is kept clean by a sweeper.

10. The Station does not want for good water, besides one or two natural springs, there are numerous wells of excellent water all over the town, these are all bricked down to the bottom and are in good order. The water of the river is not used.

11. As regards the health of the inhabitants the report of the Medical Officer in charge shows very favourably. Besides fevers which prevail to a greater or less extent in all towns in Burma, he only mentions Hooping Cough, Measles and Colds as the prevailing diseases.

12. An examination of the Births and Deaths return strengthens the opinion expressed by the Medical Officer that the Burmese are the healthiest, and the Arakanese and Natives of India most liable to sickness, this is especially shown by the return of the Mortality by fever, the casualties among these races were many while the Burmese comparatively escaped.

The inhabitants of Sandoway are composed of Burmese, Arakanese, Natives of India, that is Natives of Bengal, chiefly Chittagonians, and a few families of native Musselmen of the country, who settled in this place from upper Burma 50 or 60 years ago.

The European population consists of the Medical Officer and his family, the Deputy Commissioner, and the Superintendent of Police, the Eurasian population consists of one individual. The health of these has been invariably good.

13. There has been no epidemic disease to report on except Measles and that was of a very mild nature.

14. The entire mortality in the past 3 years has been respectively 84, 58, and 49, the greatest number of deaths take place among children under 5 years of age.

15. The only endemic disease, the Medical Officer is able to name as prevalent in the station, is Fever.

16. The Officer in charge of the station is keenly alive to the advantage of diffusing the benefits of vaccination, but he has met with much dogged resistance from a prejudiced population who refuse to see the advantages to be derived from submitting to the operation; grave doubts also as to the efficacy of the results, from the apparently inferior quality of the lymph used prevented his urging the matter as strongly as he would have wished, nevertheless the results for the present year, when they come to be shown, will show a considerable improvement on former years.

17. There is no employment carried on in this district which is specially injurious to health.

18. Opium smoking prevails largely throughout the District, the Medical Officer has shown that it is directly injurious to health; and that it is not a necessary stimulant as some have asserted, is I think proved by the fact that in Gaol,

where they are compulsorily deprived of it, even confirmed Opium smokers improve in condition and health.

19. There is one Bazaar only, it is under the direct control of the officer in charge of the Station, and is kept clean by a Sweeper.

20. No slaughter house exists, as there is no use for one. The Grave yards are far removed from the town.

21. The Sanitary state of the Gaol and Dispensary is reported to be very satisfactory.

22. No written recommendations were made by the Medical Officer, but he from time to time communicated verbally his observations as occasion offered.

23. I would remark in conclusion that the filthy state in which the town was reported to be last year is not now observable, on the contrary it appears to me that Sandoway is rather beyond the average a clean little town, but the Station is not well situated in a commercial point of view, and is not likely to increase much on its present site.

In the Births and Deaths report and returns are included the population of the Suburbs, some small out-lying villages containing 837 inhabitants, so the population of the main town of Sandoway numbers only 1,516 souls.

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# ANNUAL HEALTH REPORT—SANDOWAY

## For 1868.

Topographical description of Station and District generally.

1. The Station of Sandoway is situated on the left bank of the Sandoway River in Lat: 18°–22′ N. and 94° 21′–49″ E., and is said to be about 25 feet above the level of the sea. The river is a small stream taking its rise from the Yoma Range, and after a westerly course of 48 miles, and about 15 from the station, falls into the Bay of Bengal. The general aspect of the Country or District is hilly and uneven, and picturesque. There are many mountain ranges running from North to South parallel with the sea coast and are thickly wooded. These commencing from the Yoma Range, decrease in height

as they approach the sea. The station is prettily situated and, except to the North-west, is surrounded by Hills and yet this natural enclosure does not shut out the winds of the different seasons—in fact, the North-west and South-west and South-east winds blow strongly into the Station. The District embraces an area of 3,667 square miles, and Goachoung is the Southernmost Town, and Mahee the Northernmost. It is bounded on the North by the Island of Ramree, on the South by Bassein, on the East by the Arakan Mountains, and on the West by the sea. The population consists of 46,187 souls. The soil is alluvial with a substratum of hard clay. The Hills abound with clay, lime stone and sand stone, and Ferruginous matter in some places.

Nature of climate and atmospheric phenomena.

2. The climate is hot and damp. The heat of April and May or the hot weather, is great and the Thermometer during the day rises to 92° or 96° and falls at night to 75°. The nights are as a rule cool, and the atmosphere then is loaded with moisture. The prevailing winds are North westerly and Westerly. In the rainy season the Thermometer is 86° during the day and falls at night to 78° or 79°. There is an immense quantity of moisture suspended in the air. Prevailing winds Southerly, South-westerly and South-easterly. The cold season extends from the beginning of November to the middle of March. The Thermometer is about 83° in the day and falls to 60°, sometimes to 52° at night. The nights and mornings in February and March are densely foggy. No remarkable atmospheric phenomena occurred during the year. The usual thunder storms occurred at the setting in of the rains, which were unusually heavy. From the 8th, to the 13th of November there was some disturbing influence in the weather marked by strong South easterly winds, rain and heavy drifting clouds to the North west it was afterwards proved that a Hurricane had travelled in that direction.

Rain fall.

3. The rainfall during the year 1868 was unusually heavy viz: in: 253.15 being 72.95 in excess of that of the previous year. The average fall is about in: 225.

Position and drainage of Town.

4. The Town is situated on the left Bank of the river and runs from N. W. to S. E. and South. Sandoway, besides its natural

facilities for drainage, has many good drains and culverts, but the central part of the Town is rather low and drainage slightly defective.

Extent of ground occupied by Town, roads &c.

5. The extent of ground occupied by the Town is 1 square mile. The main road runs from N. W. to S. E. along the bank of the river, and four other roads run parallel to it; their width is about 22 feet. The number of cross roads are four, and they run from N. E. to S. W. The prevailing winds in the hot and rainy seasons are N. W., W., S., S. W. and S. E. In the cold weather E., N. E., and N. The population of the Town, excluding the suburbs, number 1,516 persons. The average superficial space to each inhabitant is about 18,389 square feet.

Condition of Town as regards drainage.

6. The Town is well drained. There is natural drainage towards the River, and the town drains are in good order. There are no swamps or stagnant pieces of water excepting an old tank which may be filled in with advantage.

Ventilation of Houses.

7. The Houses are small and low, and the flooring some 3 or 5 feet from the ground. From their construction, I should say, good ventilation is impossible, but from the nature of the material of which they are built (Bamboo matting) there is as much circulation of air as is necessary.

Overcrowding.

8. The houses are not overcrowded.

Conservancy.

9. There is no Conservancy Establishment at Sandoway. The people keep the thoroughfares clean in front of their houses, and there is a marked improvement in cleanliness about the dwellings of the inhabitants.

Water supply.

10. There is an abundance of good water and obtained from wells. The wells are yearly cleaned out and branches of trees &c., overhanging them are cut away.

General health of inhabitants.

11. From January to February the health of the inhabitants was very good. Hooping Cough which appeared in Town in

March ceased in April; from May up to the end of August the health of the inhabitants continued good again; but so early as September when the rain declined, after very heavy falls in June, July and August and after the country was twice inundated. Fevers of severe type and form prevailed and continued to do so to the end of December.

Comparative state of health of the several sections of the community

12. The Burmese form the largest section of inhabitants of the Town being 1,332, the Arakanese about 616, the Natives of India, chiefly Chittagonians 277. The Mugh Musselman a small section. The Arakanese seem to suffer most from sickness, Natives of India next, and the Burmese comparatively the least.

Epidemics

13. Hooping Cough appeared epidemically amongst children in March and ceased in April.

Mortality

14. The mortality as shewn in the Registration Return is 65 being 2.76 per cent to the population. Not high at all considering the many causes which operated to destroy life during the year.

Endemics

15 The only Endemic I should say, is Fever.

Success or otherwise of Vaccination

16. Vaccination progresses very slowly and therefore successful to a small extent.

Employment injurious to health

17. There is scarcely any employment in this District which I can say is injurious to health. The greater portion of the inhabitants are Agriculturists and though they plough and sow during the rainy season and consequently much exposed to the weather yet I have not seen any ill effects follow.

The effect of Opium smoking or eating

18. The vice of Opium eating or smoking is very extensive in the District. Out of 76 Criminal Prisoners admitted into Gaol during 1868, more than one third were noted as opium smokers and eaters. That the practice of opium eating is injurious there can be no doubt, but the ill effects are not apparent before 3 or 4 years. A peculiar sallow appearance of countenance and emaciation betray the victims. They are debilitated and rendered helpless—the appetite is impaired and digestion imperfect. They are unable to take any food without the accustomed

stimuli—there is a great tendency to derangement of the bowels particularly to hœmorrhage from bowels—nervous prostration and incapable of much physical exertion and the victims are therefore driven to rob or steal even in a small way, so as to be enabled to obtain their usual supply of the drug, and hence they come into Gaol—and after a sojourn of 18 months or so they leave it healthy and strong; but in most cases to renew their wonted habits and re-enter Gaol in the miserable condition as before.

State of the Bazaar.

19. There is a small Bazaar here and it is creditably clean.

State of slaughter house and grave yards.

20. There are no cattle slaughterers and therefore no slaughter house. The grave yard is about 2 miles away from Town and remote from dwellings. It is in good order.

Sanitary state of public institutions.

21. The sanitary state of the Gaol and Dispensary is very satisfactory.

Recommendation of importance made during the year.

22. None.

Any additional remarks thought necessary.

23. None.

C. E. PYSTER,
*Civil Medical Officer, Sandoway.*

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# HEALTH REPORT—RANGOON.

**For 1868.**

Sanitary improvement in the town.

Under this head the Civil Surgeon classes the following as having been effected during the year under review.

I. A Culvert with 2 Sluices constructed in Montgomerie's street to prevent the Burmese Burial ground in the vicinity from being inundated by the tide.

II. The raising of Fytche Square.

III. The draining and raising of Block B 1 and B 2.

The first was a very important work and great good will arise from such a salutary measure.

The second is also an important work as what was originally a nasty swamp in the middle of the town, is now being rapidly converted into a nice healthy pleasure Garden.

The third is a very important work and a most needful one. The Kutcha drains that formerly existed in these Blocks were a reproach to the town—filth and all manner of refuse used to accumulate in them and become embedded with the soil, while for drainage purposes they were next to useless, now that Brick drains have been constructed much good will result. Roads have been raised and will prove a great boon to the residents of these Blocks. Formerly the roads were almost impassable during the monsoon months. The actual Blocks however on which the houses are built are still very low—the raised roads cutting through the Blocks have brought to view in a more conspicuous light the actually low lying land between. The floors of many of the houses are almost below the level of the roads, and the low land between during the monsoon months is completely inundated, even during the dry season, high spring tides washing up the Brick Drains are apt to force their way over or through the side drainage apertures and inundate the land; the tides recede but the water is left to stagnate. It is most desirable that now the roads have been raised and improved that the Blocks themselves be raised to the level of the roads. This would at once obviate accumulations of obnoxious water such as at present exist, and for this purpose owners of houses whose floors are below the level of the roads should be made to raise them in order that the Sanitary work could be conducted without hindrance.

Referring to the Brick drains that have been made in the Blocks alluded to, it is particularly noticeable that some of them for actual drainage purposes are not what they should be—the old drains constructed some 2 or 3 years ago or more are alluded to. The drainage slopes now towards the canal road, instead of towards the Strand road, the consequence being that during spring and high tides in the dry weather water is forced up through the Blocks as far as the Canal road and lodges there, the receding water does not draw it off an interval of some days occurs before the next spring tide, and in the mean time this water becomes a mass of black stagnant filth. It is extraordinary the rapidity with which the water stagnates but may be accounted for from the fact that the drains are never free from water and the bottom of the drains are covered with a thick coating of pure black

slimy mud an accumulation of deposit from the water, combined with refuse. Originally no doubt the drains were properly sloped but there is no doubt now that they have sunk deeper and deeper in proportion to the distance from the Strand road This may be accounted for from very heavy brick buildings having been erected close to the drains inland whereas nearer the Strand brick houses were already erected before the drains were made, or it may be that the soil inland is not so firm and compact as that near the Strand road, but whatever the cause, it is most desirable that the necessary improvements be made, as the drains in question become cesspools of filth of a most offensive character, and from their large capacity and peculiar formation it is most difficult to keep them clean, indeed the Conservancy Gang would have nothing else to do if it was employed in continually cleaning the drains. In the monsoon their state is not of such consequence as the water inside them is being continually stirred up and mixed with pure rain water, the natural drainage keeps filling them and forcing out the mixture, refilling them again so that the offensive nature of the water is rendered comparatively harmless.

Conservancy arrangements.

The Conservancy Staff at the disposal of the Magistrate which consists of 2 Conservancy Officers and 40 prisoners with 2 scavenger carts, have been kept closely at work during the year under review, they parade the streets the whole day long clearing up refuse and cleaning the Town, but it is obvious that this staff is inadequate for the Conservancy of the whole Town, they cannot clean every street and drainage space in the Town every day, as ought to be done, however they do all that can be done by them and generally keep the Town clear of refuse. The drainage spaces require a great deal of attention and for this work alone one Cart might be very profitably employed in each Division of the Town every day. Had the daily refuse to be carted to any distance from the Town the present Conservancy staff would be greatly crippled as regards their efficiency ; the time occupied in going from and returning to the Town would necessarily retard conservancy operations to a great extent. At present all refuse &c, is deposited on the River bank and serves to raise the naturally low lying river frontage, but objections have been made to this,

and it would perhaps be more beneficial if some other method of disposing of the daily refuse were adopted. A moderate sized boat moored in a central convenient place near the strand road frontage might be used as a receptacle for the refuse so that every evening it could be taken well out into the stream and be emptied of its contents. The strong current would wash every thing clear away, and there would be little fear of its being again deposited any where near the Town of Rangoon.

Pure water is no doubt a great blessing in any Town, and a regular supply of water would prove a great boon to the people of this Town, but the present supply is not of such a poor nature as to call for any very urgent measures, the supply is fair and generally adequate to the requirements of the people. In the months of March, April and May it is a scarce commodity and greatly needed, for these are the 3 most trying months in the year. A system for the supply of good water is required and would doubtless prove most beneficial and conducive to the health of the people. The general drainage of the Town has progressed well and is receiving active attention, there is no doubt much to be done in this respect, and which will in time be carried out.

The Burial grounds are situated in the outskirts of the Town, with the exception of those in the Poozoondoung Road. There certainly are several Burial grounds here, but they are some distance from the road and in unfrequented uninhabited parts—there is no chance at present of the Town extending any where near them, and complaints are seldom or ever made with reference to them. It might be advisable to allot new sites for Burial grounds as the Town extends itself and the present Burial grounds become crowded, but there does not appear to be any urgent necessity for it at present. If sites could be allotted and it is thought by those who are most competent to judge, that the present grounds are injurious to the Public health it might be judicious to close those that are so considered injurious.

The present slaughter house is certainly a dilapidated building and devoid of facilities necessary for efficient sanitation, but a plan for a slaughter house has been submitted and it is to be hoped that before long it will be constructed—the

site of the slaughter house is good, and now that the road leading to it is being raised and metalled nothing further is required; one good slaughter house will it is thought suffice for the requirements of the Town. It is within easy distance of the chief town markets, and no inconvenience has hitherto been experienced except on account of the road leading to it, when during the last monsoon it was in a very muddy state, but then it had only recently been made. The land on either side is very low, and indeed at the slaughter house itself which is surrounded by a creek running up from Poozoondoung. The new building will have to be raised on masonry, and the natural creek will probably prove of some use. It is desirable that small slaughter houses for hogs and sheep be erected on approved plans.

The question of Privies in the Town is one that requires much consideration. There is at present no regular system of Privies, each house holder has his own Privy erected in his own peculiar style. The Conservancy Department keep a constant supervision over them and take measures to see that they are kept clean, but these little privies are so numerous and placed in such out of the way corners that many doubtless escape notice. The Public Latrines of which there are five,* are not nearly adequate to the requirements of the Town, and I agree with the Civil Surgeon in suggesting that more be erected, but to enforce every one to use these Privies when erected, and close private Privies would certainly be an injudicious measure, and one that however good in theory, could not be carried into practice with the many castes and mixture of Races we have in the Town—but there are other considerations besides those of Caste and Races which would negative the suggestion except under a particularly perfect system of Latrines. Private Privies must be used and must be kept clean and inoffensive; to do this there must be a system of conservancy for this purpose. All Private Privies ought to be constructed on one plan so as to secure decency and permit of easy conservancy—a small Privy might easily be constructed so as to ensure the required sanitary facilities. The chief requisite would be a strong and portable receptacle for the excreta; to be placed in the chosen spot, so that it could be closed and cleared of its contents with ease, cleaned and

*2 Public, 2 Private.

then replaced in its stand inside the Privy, which might be made of either planks or bamboo walls with top coverings—night carts ought to be placed in convenient spots for the reception of the contents of these utensils which should be emptied every night—a few maters would be required to be kept for each Block, but the cost of these would be defrayed by the people themselves, if it were made compulsory to have the utensils cleaned every evening. Under a strict supervision they would join together in hiring and paying for the services of the maters, and the cost would be so small that it would hardly be felt. A few sheds with lime at the night cart depôt would be requisite, so that the utensils when emptied could be coated inside with lime as also the receptacles on the night carts. This would have the desired effect in keeping them fairly clean and as inoffensive as possible. A staff for the carts would have to be entertained but the cost would not be excessive and might be defrayed in many ways. These carts after a certain hour at night would move off and deposit their contents at some locality where it would not prove offensive. They might all be kept in one place in the day time, and be moved into their different stations at night. This plan if properly supervised would it is thought be an improvement and answer every purpose. The system of enforcing dry earth Privies would be a most difficult one, and could not well be done, if it could, there would still be the difficulty of getting rid of the excavations—each block in the Town would require a night cart but it is possible that one cart would answer for two Blocks. The only difficulty would be as to the sites on which to station the carts at night, so that they would be within easy access of their respective Blocks, and not be offensive, but this might be managed and the difficulty be overcome.

The most prevalent and fatal disease during the past year has been fever, occasioned by malaria. This may be accounted for on account of the low marshes that exist here and there, and especially in the Suburbs, in fact the whole Town is low, as is forcibly apparent in many parts. The whole or a great part of the river frontage is composed of swampy marshes which ought to be filled in and raised above high water as soon as possible. High tides inundate them and receding again leave water to stagnate for days. The

smell that arises from those swamps after the sun has set, and when the breeze is from the South or South east, must prove more or less injurious—no doubt these will be all filled in, in time. The raising of the Blocks where the people reside is of much more importance at present much has been done in raising the land in Rangoon, and much is being done at this present time. Small Pox has been next fatal to fever, and appears to have confined itself to the low crowded quarters, especially Yamboonquin, the streets here are narrow the houses are on low land with low floors, and low roofs, and they are more or less huddled, together, ventilation is not so free as it might be, and there is no regular system of drainage. This it is to be hoped will be remedied as soon as the more important quarters of the Town are completed, as regards their wants.

In conclusion it is a matter of congratulation to be able to state with the Civil Surgeon, that Public health has not suffered to any extent during the year under review. We have been free from epidemics and it is to be hoped that the coming epidemic that has been so often alluded to may be staved off, for many a long year to come yet.

A. G. STROVER.

*Magistrate.*

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## HEALTH REPORT—RANGOON.

**For 1868.**

1. Sanitary improvements in the town. With the exception of a culvert with two sluices having been constructed in Montgomery Street to prevent the Burmese Burial ground and the low ground in the vicinity there from being inundated by the tide, the raising of Fytche's Square, and the draining and raising of blocks B. I. and B. II. now in course of completion, I am not aware that any Sanitary improvements have taken place in the town of Rangoon during the period under review.

2. The Conservancy arrangements have received the best attention considering the insufficient staff at the disposal of the town Magistrate for that purpose viz: two conservancy officers and forty prisoners; however, it is satisfactory to be able to state that notwithstanding this drawback the Public

Health has not excepting in some of the Suburban localities to which the operation of the Conservancy Department does not extend, suffered to any serious extent.

I cannot however proceed further without stating here my conviction that unless Rangoon is plentifully supplied with pure water, sufficient house accommodation, efficient drainage, and a much larger conservancy staff, an epidemic is I think sure sooner or later to appear amongst us.

3. It is advisable that the burial grounds should be at a greater distance from the town.

4. Two properly constructed slaughter houses in opposite and accessible localities are urgently required, the present shed near Poozoondoung for the maintenance of which in a state of cleanliness there seems to be no provision, is really not approachable for months during the S. W. monsoon.

5. It is a well known fact and I have reported it soon after my arrival here last May, that sunken privies are very common throughout the town, and I understand many of them have been in continual use for the last fifteen years without having been once emptied! The wonder is under such circumstances that every well in the town has not been poisoned, and that some frightful epidemic has not devastated the place long since.

6. In my first monthly Health report on this town, I described a system of conservancy which I do believe is the only one applicable to this place, viz: Public Latrines should be erected in different parts of the town, somewhat after the fashion of those in use with the European Regiment here, and occupants of private houses should be made to substitute the same for the present abominations; the excreta should be removed every night in air-tight carts to a distance not less than two miles from the town, and there be deposited in pits and covered with a layer of earth.

In course of time when the inhabitants would more freely resort to the Public Latrines, during the dry months of the year the "dry earth system" with a pug mill might be brought into use in one or two of the more frequented ones, and I venture to say that Chinamen and other agriculturists when they come to know the value of the poudrette as a manure would gladly pay a sum for it that would to some ex-

tent reimburse the Department for its outlay. It is I think worth the experiment on this small scale, for if it succeeds, it will not only be conferring the greatest blessing on the town residents, but also very lucrative to a Department that wants money.

7. By far the most prevalent and fatal disease throughout the past twelve months has been fever of a remittent character, and I should say in most cases the result of Malaria, but I have not remarked a single instance of that disease which my predecessor states "is gradually obtaining a foot hold in this town, and that is Typhus Fever." Although fever of the remittent type is I believe the most fatal of all fevers generally met with in the East, I am not inclined to believe the great mortality from it here is due to its virulence. I should rather imagine much more to the mal-treatment adopted by the Burmese. They rarely think of applying at the Hospital for medicines till all hope has gone, and never think of removing the sufferer from the unhealthy locality.

8. Six deaths occurred from Cholera, which complaint seems to have been sporadic in character. Nine persons were attacked by it in Poozpondoung in May last, (the Magistrates return is incorrect,) four of whom died. It was remarked that those who suffered from the complaint in the latter place were all natives of India, but notwithstanding a careful enquiry into its origin, nothing satisfactory could be ascertained.

The three remaining recorded fatal cases were isolated ones, and from the fact of their being so, were probably not cases of Asiatic cholera at all.

9. Of the exanthemata, Measles and Small-Pox have existed amongst us, causing a mortality of 159 and 102 respectively; the former prevailed throughout the town but more specially in the Madrassee quarters; it was not very severe in type, and the greater number of deaths were caused by subsequent neglect. The latter is now Endemic and generally prevalent in the localities of Kemendyne, Yam-boun-quin, Poozoondoung, and the Madrassee quarters. Deaths from it have been more numerous of late, and until vaccination is made compulsory it will remain among us in greater or less force.

10. I am aware that some persons in this country do not look upon inoculation with that horror which I think it deserves, and give as their reason in support of Inoculation, the inertness of vaccine at a season when small-pox is prevalent pretty generally. Now the disease barely prevailed during the greater part of the monsoon, the only season that vaccine is found to be inert—being the occasion only of 11 deaths during the month of June, July, August and September!

The Superintendent of vaccination informs me that in the suburbs inoculation is very freely practised, and that it has more than once caused the spreading of Small-pox and the death of not a few persons. He also believes that inoculation is the cause in a great measure of the disease being endemic here.

Compulsory vaccination has stamped Small-pox out in Denmark, I consequently do not see why if practised with energy the moveable Vaccine Establishment as recommended by Dr. Charles, being always ready in case of an outbrust of disease in any part of the district—during the dry months of the year in this country, it would not lessen the likelihood of Small-pox being so prevalent and eventually expell it altogether from among us, but to attain this object Vaccinators should be much more numerous, they should be the sons of inoculators, or inoculators themselves, be retained all the year round, and live among the people, who will thus become habituated to the prophylactic, and Vaccination will make its way and in time become one of the institutions of the country.

J. J. HEFFERNAN.

*Civil Surgeon and Health Officer.*

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## DEPUTY COMMR'S. HEALTH REPORT.—THAYETMYO.

**For 1868-69.**

Notwithstanding the increase in the number of deaths by 58 over last year, the town of Thayetmyo has been very healthy.

No Cholera had appeared up to the end of the Official year.

In January 1868, Small-Pox showed itself in the town and did not finally disappear till the beginning of June 1868,

the total number who died from this desease was 16, all of them children under three years of age.

The Conservancy Establishment sanctioned has been engaged and the carts daily remove all the rubbish &c. from the streets, and the town is much improved in point of cleanliness. New and broader streets have also been opened which has contributed considerably to the healthiness of the town.

Public Latrines are much required—the Executive Engineer last year undertook to draw out and submit a plan for them, this he has not yet done, but will again be requested to do so.

W. MUNRO.
*Assistant Commissioner.*

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## HEALTH REPORT.—THAYETMYO.
### For 1868.

A description of the soil and site of Thayetmyo having already been published in reports of former years, I do not consider it necessary to enter into that subject in the present year but I trust to be able to do so fully in my next report.

The number of deaths registered in Thayetmyo for the past year is 281 showing an increase of 58 over last year but as I have shown in the report on Births and Deaths the death rate is great among children ranging from 1 to 5 years of age. This I attribute in a great measure to the want of care and the food that is given them.

The Town itself I consider healthy. The streets are clean and airy and have drains running on either side. Three conservancy carts and two scavengers are now employed in daily moving the filth and rubbish that may collect in any part of the town. The Conservancy establishment I consider is scarcely large enough to do justice to the Town and would recommend more scavengers being employed.

The great want in the Town are public Latrines—At present for want of these Latrines the inhabitants commit a nuisance in all places. This must to a considerable extent vitiate the atmosphere and render the people liable to an outbreak of Cholera at any time.

During the past year there were no Epidemics as I consider them. There were certainly a few cases of Small Pox and among them only 10 deaths. This itself is sufficient to show the healthy state of the town. I regret much I am unable to give a better report but as I only assumed charge of the Civil duties during this month and as my predecessor left no report of the health of the town, I can only give a rough statement as gleaned from the Death Returns.

D. C. McALLUM.

*Civil Surgeon.*

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## DEPUTY COMMISSIONER'S HEALTH REPORT—PROME DISTRICT.

**For 1868.**

1. The Civil Surgeon's Report which has now to be remarked on is for the year 1868, and is dated 4th January 1869. The present Deputy Commissioner did not arrive here till March 1869, and he has only just learnt that he is expected to make some remarks on a Report which was submitted so long before his arrival in this place. His remarks must necessarily therefore be brief and unsatisfactory.

Temperature.

2. The Civil Surgeon commences his report with some remark son the meteorological phenomena of the year—The temperature of the hot weather is said to have been slightly below the average of the two previous years, but it is added that no great reliance can be placed upon the accuracy of the thermometer from which the variations of the temperature have been recorded. If this be the case it is suggested that the defect might be rectified at a very moderate expense.

Rainfall.

3. The Civil Surgeon notes that the rain fall in 1868 was $48^{3}/_{5}$ inches against 35 inches in 1867. In the Civil Surgeon's Report for 1867 the average rain-fall was estimated to be 40 inches. This estimate was challenged by the Sanitary Commissioner who computed the average fall to be 70 inches. But the rains of 1868 were more than usually heavy and if the amount of rain in that year was only $48^{3}/_{5}$ inches as stated by the Civil Surgeon, the Sanitary Commissioner's estimate of the average must be wrong.

The Deputy Commissioner would suggest that the solitary rain gauge in use at Prome may by its incorrectness be the cause of the doubt which hangs over this disputed point, and the Deputy Commissioner would recommend that a second gauge be allowed that its readings may be compared with those of the old one.

Epidemics

4. In paras 7 to 18 the Civil Surgeon remarks upon the epidemics by which the town of Prome has been visited during the year.

The following is a comparative Statement of the number of deaths from Cholera, Small pox, and Measles during the last two years.

| | | | |
|---|---|---|---|
| 1867 | ...145 | 39 | 12 |
| 1868 | ... 50 | 39 | 111 |
| Decrease | ... 95 | „ | Increase 99 |

Conservancy

5. On the statements of the Civil Surgeon regarding Conservancy the Deputy Commissioner can say but little having no previous local knowledge to guide him—An addition has been sanctioned to the personnel of Conservancy establishment but as no carts were applied for at the same time and as an additional Establishment would be useless without Carts it has not yet been entertained.

HORACE A. BROWNE,
*Deputy Commissioner.*

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# ANNUAL SANITARY HEALTH REPORT OF THE PROME DISTRICT.

**For 1868.**

1. CLIMATE, EPIDEMICS, &c.- With the exception of a severe "North Wester" of about 30 minutes duration, which swept over the district on the 25th April last, by which one boy lost his life in the Prome Bazaar, and in its violence unroofing houses, uprooting trees, and capsizing boats upon the Irrawaddy, few atmospheric vicissitudes occurred during the past year to disturb the equilibrium of the ordinary cycle of

phenomena attendant upon the North East and South West monsoons.

2. The temperature during the hot months of the season was slightly below the average of the two previous years, but since thermometric readings are constantly liable to variation from the slightest causes, it is obvious, that no great reliance can be placed upon the records of a single Thermometer that has not for years been compared with a standard instrument.

3. The rains set in on the 18th May and continued pretty regularly until the end of October, 48 inches and 6 tenths having fallen during that period against 35 inches in 1867. The Burmese considered the season an unusually wet one which so far corroborates the statement I made in my Annual Sanitary Report submitted at the end of the Official year, that the annual rainfall in the Prome District seldom exceeded 40 inches.

4. Since both the health and prosperity of the inhabitants of this part of the world are almost entirely dependant upon the periodical return of the rainy season, it is of the last importance to them that the precipitation of rain, both as to its duration and quantity should be equally distributed for the purpose of regulating the growth of the productions of the soil. The year under review has been remarkably favorable in this respect, and, I am happy to be able to report, that though serious apprehensions of an universal inundation were entertained early in the season, the rice harvest has turned out a remarkably fine one, which has reduced the price of that important cereal to 2 annas a viss. There has, however, been a decrease during the past year in the paddy cultivation of 953 acres of land, from causes chiefly attributable to partial inundations at the commencement of the season, loss of cattle, and destruction of crops by rats.

5. In my Annual Medical Report for 1867, I mentioned that the alluvial and sandy soils in the vicinity of Prome were admirably adapted for the cultivation of Indian corn. Further experience convinces me that not only would it grow luxuriantly here, but in great plenty owing to the mildness and humidity of the climate. The Burmese, however, appear to prefer the cultivation of the custard apple, which is neither so productive, nor so useful. Moreover from

the natural configuration of the face of the country, its geological peculiarities, dense jungle forests, and geographical position, it is peculiarly adapted to the cultivation not only of the above mentioned grain, but also for Cotton, and most of the esculent cereals and fruits, and vegetables, which flourish in inter-tropical regions.

6. The Northern portion of the District is also safe from annual inundations, in consequence of the elevation by silt of the banks of the Irrawaddy, and the proximity of several well known ranges of hills which attract the superabundant moisture of the atmosphere.

7. I regret however, to, observe that notwithstanding the favorableness of the past season to cultivation in general, the welfare of the inhabitants was considerably marred by the presence of those subtile and inexplicable causes in the shape of epidemics, which never fail to carry death and devastation along their tracks, and to leave no records of their existence save the helpless wailing of frail humanity for the victims who have passed "to where beyond these voices there is peace."

8. The most fatal was an epidemic of Measles which broke out early in February in the town of Prome among the coolies who were working in the Cotton shed of the Agent of Messrs. Todd, Findlay & Co., and rapidly spread over the whole town, and extended to the neighbouring village.

9. The number of deaths which resulted from this disease in the town of Prome alone since the 15th February last amounted to 111, the greatest number of whom, as will be seen from the subjoined Tabular Statement died in the months of May, June and July.

10. The coolies among whom it broke out were all from Upper Burma who had only arrived in Prome a short time previously, so that there can be no doubt they brought the disease along with them from beyond the frontier.

11. There can also be as little doubt that this high mortality was mainly due to the ignorance and carelessness of the parents and attendants of those affected by neglecting to pursue the most ordinary dictates of common sense in treating them.

12. Most of the casualties occurred from the after effects of the disease, chiefly from Atrophy, and inflammation of the chest. I have myself seen several cases from both causes, all of whom died through sheer mismanagement, and whom I invariably found in a state of nudity though the atmosphere was damp, and to them cold at the time.

13. The only and most effectual method of putting a stop to this annual recurrence of epidemics from across the frontier would be to adopt a system of quarantine by which all emigrants would be subjected to a medical examination.

14. The irruption of small pox from all I can ascertain was not the result of a fresh visitation, but simply a continuation of last year's epidemic which was probably retained in fomitis (substances embued with contagion) during the cold season to break out again afresh in the hot weather; or what is just as probable, was propagated by inoculation which the Burmese in this District practice extensively in favorable weather. The outbreak, however, was not of a very virulent type, since only 33 casualties resulted from it in the town of Prome, though the disease was more or less prevalent for a period embracing about nine months out of the year.

15. I am unable to conjecture to what extent both this disease and Measles prevailed throughout the district, but on the authority of the registrar, I think I am justified in saying not to any very great extent.

16. It is much to be regretted, that the Burmese would not take more kindly to Vaccination than they do, especially when Small Pox is prevalent, not only do they avoid it as much as possible, but resort to all kinds of excuses to postpone the operation even when they are visited at their own homes, and I regret to say that the Thoogyees appear to have a special prejudice against it, for when they do procure any children for vaccination, they invariably collect them in the outskirts of the town, though there are hundreds procurable in their immediate neighbourhood.

17. The outbreak of Cholera was more sporadic than epidemic in its character, and though a sufficient number of casualties resulted from it in September and December, to create more or less alarm, I am inclined to attribute its sudden increase in the former month entirely to the too free in-

dulgence by the inhabitants in edible fruits, especially the custard apple which was in season at the time, and in the latter to the effects of cold resulting from exposure in attending night Poays. With the exception of the larger towns, in which an occasional casualty occurred in the form of Choleraic diarrhœa, it may be safely stated that the district in general was comparatively free of it.

18. The following Table exhibits seriatim the mortality that resulted from Measles, Small Pox, and Cholera, during the year—a more detailed statement of them will be given in my next Annual Sanitary Report.

| Months. | Measles. | Small Pox. | Cholera. | Remarks. |
|---|---|---|---|---|
| January | ... | ... | ... | |
| February | 5 | ... | ... | |
| March | 7 | ... | 2 | |
| April | 17 | 3 | ... | |
| May | 22 | 5 | ... | |
| June | 25 | 6 | ... | |
| July | 21 | 3 | ... | |
| August | 5 | 3 | 9 | |
| September | 8 | 4 | 14 | |
| October | 1 | 2 | ... | |
| November | ... | 5 | 3 | |
| December | ... | 8 | 22 | |
| TOTAL | 111 | 39 | 50 | |

## II.—CONSERVANCY.

1. Among the several improvements which have been effected during the year under review the most important was the Government sanction for filling up the town swamp. This is a work of great public utility, which will bring about a radical reform in a Sanitary point of view, but a great deal of precious time has already been lost waiting for plans and further sanction from the Chief Engineer's Office to remove the rails from the tramway originally laid out, and to transfer them to the Suizoo quarter of the town, which is now considered the most suitable locality for commencing operations.

2. Several new roads intersecting each other at various points throughout the Town have been constructed, and others

have been repaired. Drains have been dug, streets and bazaars swept and cleaned, together with other works of minor importance, and the principal roads and streets have been brought into conjunction with the three principal thoroughfares which lead out into the district.

3. A great many new and substantial wooden and pucka houses, are also rapidly springing up, in various quarters of the town, which to say the least of it, shows that the trade of the place must be rapidly increasing, and that a considerable amount of wealth must be in circulation among the inhabitants. This together with the fruits and blessings of a good harvest should render the people contented, happy, and prosperous.

4. The cleanliness and drainage of the town however, are not, after all, in so satisfactory a state as they ought to be. The bazaars are often strewn with rubbish, some of the drains are stagnant, especially in the rains, and many of the wells are surrounded by stinking puddles, the consequences of which are, that foul effluvia are to be encountered, not only in the town and bazaars, but also in many places along the banks of the river, over which the local authorities have apparently no immediate control.

5. The Civil Surgeon should be the health officer of the town, independent of any increase of salary, and not as at present, a helpless Ex-officio; but he ought to be vested with sufficient authority, either to punish or summon offenders, who might object to removing nuisances, before the Deputy Commissioner, because from the nature of his profession he is more accustomed to the minutiæ of Sanitary matters than officers who have already got very arduous official duties to attend to.

## III—GAOL.

1. Since the prisoners were removed to the new Gaol at Thayetmyo on the the 21st December, and that the old Gaol here will be pulled down as soon as the new Lock-up which is now in course of construction, is completed, it would be superfluous now but to consider it as an institution of the past. It has always enjoyed a notorious reputation for its unhealthiness, and deservedly so, but how far this state was

due to defective construction, the influence of malaria, or inefficiency in its internal administration is now too late to enquire, suffice it to say, that its statistical records sufficiently explain the causes of its abandonment.

2. During the past year it was remarkably healthy, in comparison with previous years. The total number of admissions into Hospital during the year under review were 315, of whom 55 were admitted on account of abscesses and ulcers produced by the coarseness of the iron fetters upon the prisoners legs against 463 in 1866 and 306 in 1867.

3. The casualties on the other hand, during the past year amounted only to 10, or 1.60 per cent of the admissions into hospital, and *(sic)* per cent of the total strength of admissions into the Gaol, whereas in the two previous years, the number of deaths amounted to 27 and 28 respectively.

4. It must however be observed, that 2 cases of Atrophy were released during the year, which, otherwise would have been among the number of casualties, but since one of the deaths resulted from suicide (a preventible cause) in the case of a lunatic, who forced a piece of brick and some woollen clothing down his throat, it may, upon the whole, be looked upon as having been a healthy year for the Prisoners.

5. One death from Choleraic Diarrhœa occurred in January, and 2 from Fever and Dysentery in February, 1 from Chronic Dysentery in April, 1 from Atrophy in August, and 1 from Diarrhœa in November. Though Small Pox and Measles were prevalent in the vicinity of the Gaol during nearly the whole year, and that several cases of Cholera occurred throughout the town in August and September, the prisoners fortunately escaped them all.

6. Their hours of labour have been moderate, viz. from 6 to 10 A. M. and from 12 to 4 P. M. daily, and their rations have been substantial, and of good quality, and a great improvement upon what they were in the habit of getting last year, each man receiving 45 ticals of rice, 5 do: of fish, or meat, 25 do: of vegetables, 1 of oil, 1 of salt and ngappee and 1 of chillies per day, but the supply of clothing allowed of 2 putsoes 9 feet by 2, annually, is totally inadequate for their requirements in the cold and rainy seasons. This deficiency of clothing, I have no doubt, was one of the principal causes

of the prevalence of diarrhœa and dysentery among the prisoners, for these diseases invarably became aggravated during the rains and in the cold season.

7. The chief out-door works in which they were engaged during the year were, making and repairing roads and drains, cleaning streets and bazaars, removing rubbish, cleaning tanks, taking wood on board steamers, and other works of minor importance. The site of the new Lock-up is on a slightly raised patch of ground in one of the best and healthiest portions of the town between the two tanks west of the town and facing the river. The building will be the shape of a triangle rounded off at the corners, containing two long wards, a hospital, cook house and latrines &c., and judging from the plan I have seen, and basement which is in course of construction, I should say that the entire arrangements have been ably designed and admirably adapted for the purpose which it is intended to fulfil. A full description of it will be given when it is completed.

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# SANITARY REPORT OF THE DISTRICT AND STATION OF MYANOUNG.

## For the year 1868.

I. Topographical description of Station and District generally.

The Station of Myanoung, the Head quarters of the Myanoung district, is situated on the West bank of the Irrawaddy river, at about 168 miles from its mouth. It is bounded on the North, by the village of Malakagoung, on the South by Shadoh, on the West by the Irrawaddy Embankment, and on the East by the River. The District extends from 17° to 18° 30′ North latitude, and from 94° 53′ to 96° 3′ East longitude, it is bounded on the North by the Prome District, on the South by the Rangoon and Bassein Districts, on the East by the Yoma Hills, and on the West by the Western Yoma, or Arakan Hills, these latter separate this district from that of Sandoway, in the Arakan Division. The extreme length of the District, is about 108 miles, breadth 76 miles, and its area, is about 4,150 square miles, with a population of about 393,627 of which 5,829 comprise the population of the Town of Myanoung. The soil is alluvial. The Circuit and

Court Houses, and residences of the principal officials are well situated at a distance of about 100 yards, from the bank of the river facing the East.

The Irrawaddy runs nearly North and South, opposite this Station, it begins to fall from November, and rises with the commencement of the monsoon.

II Nature of climate and atmospheric phenomena

The climate of this Station is nearly similar to all other Stations of British Burma, damp and moist; the hot weather commencing about February, and terminates with the commencement of the monsoon, about the middle of May, but the weather continues oppressive, until the rains have fully set in; the rainy season, terminates about the end of October, when the cold season is ushered in, and which continues until the end of February; the weather during these latter months, is very pleasant and bracing, the Thermometer ranging from 54° at sunrise, and not averaging more than 70° at noon; the hottest months of the year, are embraced in the period from the beginning of April, to the setting in of the monsoons; the mean height of the Thermometer, being in the shade at 2 P. M. 99° to 102°, but the hottest part of the day is between 2 and 4 P. M.

III Rainfall

The rainfall from April to October, averaged during the past year, 52.4½ inches, as registered by my predecessor, and which exceeds that of the past year, by about 6 inches, the greatest fall being in the months of July and August, when the Register shewed 10.6½ and 16.7 inches respectively.

IV Position and drainage of town.

The Town is situated to the South and North of the residences of the Officials, and on the west bank, of the Irrawaddy, nothing can be said of its drainage it being all low ground, towards the West, and to which direction, the superabundant water tends, aided by artificial drains, but which, owing to the nature of the soil, absorbs the greatest portion.

V Extent of ground &c

The extent of space occupied by the Town, is said to be about 2 miles from North to South, and about 200 yards from East to West the principal roads are three, 1st, the Strand, along the bank of the river, about 16 feet broad, well raised and metalled with

soorkee, and extends the whole length of the Town, the 2nd, is parallel to the former, and of the same breadth commencing from behind the Deputy Commissioner's Court House, and extending to the South end of the town, but it is only partially metalled, the 3rd extends from the banks of the river in a Westerly direction to the Embankment—besides these there are several smaller cross roads, uniting the Strand, with the road running parallel with it and south of the Court House. The average superficial space occupied by each individual is 117.42 sq: feet.

VI. Condition of town &c.

The condition of the Town is as clean, as can be expected but the individual houses, are capable of improvement; the drainage might also bear improvement, no change has taken place during the year under review.

VII. Ventilation of houses.

The ventilation of the houses of almost all classes of the Burmese, is very bad indeed, the dormitories particularly so, having neither windows or doors, excepting the opening of a flight of steps from the lower to the sleeping compartments, and the small open space between the roof and the walls, this must be very injurious to the inhabitants, more especially during the hot season.

VIII Overcrowding.

The area occupied by the 1,094 Houses in the town is estimated at 684,460 square feet, and this to the population affords each individual a space equal to, 117.42 square feet, so that there is no overcrowding, the space to each being ample.

IX. Conservancy.

There is no conservancy establishment for the Town.

X. Water supply &c.

The water used by the inhabitants, is procured from the river, and is of good quality, and abundant in quantity at all seasons except during the rainy season, when it becomes muddy, but is easily made drinkable, by filtering ; there are a few wells in the neighbourhood, but these I believe are seldom used, except during the monsoons, when they are resorted to, but even then, to no great extent.

The health of the population, appears from the Returns, generally good. The principal diseases from which they appear to suffer, are Fevers, diseases of the Stomach and Bowels, and affections of the respiratory organs.

XI. General health of inhabitants.

It can scarcely be said that one portion of the community, suffer more than another if we except the poorer classes; who, from their limited means, can ill afford the comforts both of food and clothing, compared with those in better circumstances.

XII. The comparative state of health &c.

No epidemic has prevailed, during the past year,—seven deaths are registered, as having occurred from Cholera, but on questioning the Registrar, on the subject, he denies all knowledge of such a disease prevailing, during the period under review.

XIII. Epidemics &c.

The mortality among the population during the past year, was 150, of which 84 were males; and 66 females; and is in excess of the past year, by 29; the ratio per cent, being 2.5.—Of the 150 deaths recorded, only (.7) seven, occurred among those attending the Dispensary for treatment.

XIV. Mortality.

Under this head fever of a malarious character, occurred to the extent of 203, this probably owed its origin, to the low swampy nature of the soil, particularly after the rains and from exposure to malarious influence in the interior of the District, where many resort, as employees of the Forest and Public Works Departments.

XV. Endemics

The number of cases vaccinated, in the District of Myanoung, exclusive of Henzadah, during the past year, is stated by the Vaccinator to be 923, and of this number, not a single failure is reported, all being noted as successful; not having seen any of the cases, so operated on I am unable to vouch for the correctness of the Return, but I fully believe it to be very much exaggerated, as to the success of the operation, for I can scarcely credit that one person vaccinating such a large number, could have had the success, which no other operator can record of his practice.

XVI. Success or otherwise of Vaccination.

There are no employments or pursuits in which the Burmese engage in that can be considered prejudicial to health, if we except the attendance at night Poays, which from the exposure to which they are subjected, engenders affections of the lungs and fevers, and tends greatly to the spread of contagious diseases, when prevailing; from the want of discrimination evinced, in allowing those suffering from contagious diseases to intermingle indiscriminately with the healthy.

XVII Employment injurious to health

Too much cannot be said, against the pernicious effects of Opium, Gunjah, and Bhang smoking; it is a habit once acquired, and persisted in, cannot easily be broken off.

XVIII The effect of Opium smoking &c.

The old Bazaar is a very poor specimen of one but a new one is in course of erection, and is very nearly completed.

XIX State of Bazaars

There is no regular Slaughter House, but the cattle are slaughtered at a distance from the Town, and is in no way prejudicial to the health of the inhabitants.

XX State of Slaughter House &c.

Of the Public Institutions, the Dispensary, and Lock-up are deserving special notice. The Lock-up, is very cleanly kept, and is capable of accomodating 60 prisoners. The Latrines attached to it, are also very clean; the dry earth system of conservancy is carried out with great success.

XXI. Sanitary state of all Public Institutions

The Dispensary is well situated, facing the River, and about 100 yards from its bank; it has a main ward, 30 by 20 feet, and capable of containing 8 patients allowing each patient a superficial space of 75 feet, it is ventilated by 4 windows, 2 East and 2 West and one door facing East; to the South of this, is the Dispensary, 20 by 20 feet and has 3 windows and 4 doors, of the latter, one communicating with the main ward to the North, two to the West, one leading to a Store room, 15 by 10 feet, and the other to another small room adjoining also 15 by 10 feet. To the North side of the large ward, is the Female ward, 20 by 10 feet and capable of accomodating 3 patients, affording a superficial area of 73 feet to each; from this is partitioned another small room to the West 10 by 10 feet and which could be made available

for secluding cases of small pox, but for its smallness, as it is only adapted for one—the Female ward is ventilated by 2 windows and one door, and has no communication with the male ward—under the building are 4 small rooms, intended for purposes of ablution, there is also a dead room, cook room and latrine situated at a distance of from 15 to 20 yards. To the North and South side of the building there are two dormer lights overlooking the Female Ward and Dispensary respectively 3 by 2 feet each. The Dispensary and out Offices are kept clean. The Latrine, is not so clean as could be wished, but this is attributable, to the careless indifference evinced by the Mehter, in the performance of his duties, and as he is the only one of his class, in the Station, an amount of independence is shewn by him; for when checked for acts of neglect, or carelessness, his invariable reply is, that he will not do the work, and another might be obtained, this he knows full well, cannot be acted on.—I have endeavoured to introduce the dry earth system of conservancy, which has acted very well, in diminishing the effluvia, but to get the Mehter to remove the excreta, is the difficulty, as he positively refuses to do so,—if another servant of this class, could be induced to come to this station, it would be a boon to the community.

The Telegraph Office is situated to the South side of the Lock-up, at a distance of about 75 yards, it is well ventilated and raised about 8 feet from the surface. The signal room, although provided with two doors, on the north and south side, is still very close, having no windows either to the East or West on both of which sides, it has a dead wall planking, extending to the ceiling, there being rooms on both of these sides for the Telegraph Master, and Signallers. The sanitary condition is otherwise very good. The Circuit House, Inspection Bungalow, and Forest Office are all well situated.

XXII. Note all recommendations &c.

The Records do not shew that any recommendations have been made during the past year, on Sanitary matters.

In conclusion, I must apologize for the meagreness of this Report, on the grounds that I have only been in charge of the station, since the 17th April 1869 and have consequently been unable to glean as much information on the various points, as I would wish, having to submit a multiplicity of

documents, left unattended to, by the Native Doctor whom I relieved, and which has kept me busily employed during the short period of my residence at the station.

H. GODBIER,
*In Civil Medical Charge, Myanoung.*

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# DEPUTY COMMISSIONER'S HEALTH REPORT—BASSEIN.

**For the year 1868.**

The Civil Surgeon submits an elaborate report on all the points suggested by an inquiry into that all important subject—Public Health. His information regarding most of the interior must necessarily be from hearsay, as the Civil Surgeon has apparently had little experience therein. That regarding the Town is from his personal knowledge, and deserves special attention, owing to the thorough manner in which the subject has been treated.

The present Deputy Commissioner being new to the District, it is obvious that any expression of opinion from him is unnecessary.

The Civil Surgeon admits that the general health of the people, the state of the Bazaar, Slaughter house and Public Institutions is satisfactory and that progress had been made in Sanitary matters, which it is assumed is due in some measure to the interest displayed therein by the responsible Officers.

A. R. McMAHON,
*Deputy Commissioner.*

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# CLIMATE AND PUBLIC HEALTH REPORT—BASSEIN.

**For the year 1868.**

Topography.

1. Bounded on the West and on the South by the Bay of Bengal; on the East by the Irrawaddy, and extending Northwards as far as the parallel of a village named on the map Kyoon Pyathat, the bulk of the low lands within these limits is very slightly raised above the level of high water mark. The Yoma or coast range on the West however covers an area of 562 square miles and attains at its highest point to an altitude of 852 feet. The low lands (the area of which is estimated at

5,505,710 acres) forms a large and important part of the Valley of the Irrawaddy as the hills form part of its Western boundary. The Eastern water shed of the latter (a spur of the Himalayas extending through Arakan) is drained by the Bassein river which with the Irrawaddy and the innumerable tributaries of both, drain or submerge (according to the state of the tide) the district on the East.

2. 20 miles inland from the Southern coast line the land on the banks of the Bassein river lies so low as to be uninhabitable to a great extent in its present unimproved state, the country is given over to the wild denizens of the soil belonging for the most part to the class of the Amphibiœ and to dacoits as amphibious apparently as the rest. Innumerable known and nameless creeks intersect this portion of the district. Here and there a fishing village is marked on the map and fishing appears to be the only branch of industry practicable in the locality. Proceeding North cultivation alternating with marsh and low scrubby Hills occurs with unvarying sameness along the whole course of the main rivers as far as the Northern boundary of the district. The rise and fall of the tide is likewise felt to and beyond the same distance except during the rains when the tidal influence is not distinctly noticeable far above Bassein Town. This with the mainly low elevation of the whole district makes it the Paddy garden of the Province and accounts for the conditions which make Paddy cultivation possible. Exclusive of the ranges, it supports a population of 514,655 souls. In the Hills on the West the soil is cultivated very sparingly. The number of cultivators so employed is about 1,850, somewhat more than 3 persons to the square mile, and the area of cultivation (Town Yah) 3,725 acres while the number of persons employed in the salt and fresh water, fisheries on the partially submerged and uninviting country towards the river's mouth is 4,583 souls. The Hill Tract therefore is but a very insignificant part of the inhabited portion of the district interesting chiefly in a climatic point of view as a condenser of moisture from the air thereby diminishing the fall of rain in the adjoining valley. Its forests however are valuable, furnishing timber for building purposes, Iron wood, Kashit &c.

3. By this topographical sketch of the district around Bassein I have endeavoured to shew that the imperfect

drainage of the land to be presently noticed is due to its physical peculiarities and mainly to its low elevation and flatness. In such a country it is not surprizing to find that every individual above tender years can "paddle his own canoe" and feels quite at home on or in the water.

The cultivation is carried on under water and the harvest men work in it often knee-deep.

Climate.

Observations upon the temperature, rainfall &c., were not recorded in any part of the district before October 1865, but judging from the limited data that recent observations have supplied it appears that the mean temperature at Bassein in the shade is 80° F. in the hot weather months viz, from April to June; 79° F. in the rains viz. from July to September, and 69° in cold weather viz, from November to February.

Temperature.

Rainfall.

The annual rain fall I have reason to think rarely exceeds 100 inches and it occurs with great regularity between the month of May and October.

I am not aware that the area more or less submerged throughout the district at the top of high water has ever been estimated but from what I have myself seen and heard, I should say that at least one third of the whole surface is navigable by canoes in the rains.

Atmospheric pressure and other climatic influences not recorded.

The climatic influences referrable to atmospheric pressure, to the electric condition of the air and to the quantity of ozone which is contained in it are less easily traced even when carefully observed and recorded, which has not been the case here, but to the more obvious atmospheric changes already mentioned must be added in estimating the character of our climate other and more obscure agents which are known to us only by their results.

Epidemics.

For example an Epidemic occurs exhibiting variations in intensity which cannot be explained by any of the atmospheric conditions mentioned. We are often compelled therefore to attribute such visitations to other obscurer causes to which the general term Epidemic constitution of the atmosphere has been applied.

The nature of this potent and destructive agency has hitherto evaded investigation and of the laws which regulate it little or nothing is known; nearly all we know with certainty about it is that here as every where else where Sanitary laws are neglected it adds largely to our average death rate.

Remediable causes of atmospheric impurity.

Of remediable causes of atmospheric impurity militating against the climate in this district defective drainage is unquestionably the most important, as the connection between this and certain types of Endemic disease can be proved to demonstration, and this leads us back to the consideration of the physical aspect of the country to which cause the defective drainage and much of our climatic peculiarities are due.

Summary.

Having thus briefly examined the more prominent agencies which modify the climate of this district viz., the Temperature, Humidity, Epidemic constitution, physical aspect of the country and some other more obscure climatic influences, I proceed to the consideration of their effects and to the habits, occupations and mode of life of the inhabitants of the district, with the view of determining the combined influence of all these causes upon the public health. Considering the atmosphere in the light of a solvent of subtile poisons of which some are eliminated from inorganic matter, others by animal and vegetable decomposition and a third class are given off by diseased living bodies, considering further that by its contact with the skin and the internal surface of the lungs it produces the most important chemical changes upon the blood and through it in the system at large, and that fatal accidents, impaired states of health, and lowered tone of system are the consequences which result from its impurity; in estimating the characters of our climate the temperature and humidity of the air together with the morbific matters it contains are most usefully considered in connection with our vital statistics.

Effects illustrated by our Vital statistics.

Mortality at different seasons contrasted.

Thus comparing the temperature with the mortality recorded in the same season of the year it appears that during the rainy

| Months viz. | The mean temperature | | The mortality per 1,000 |
|---|---|---|---|
| From June to September | 79 F. | | 36 |
| April, May, Oct. & Nov. | 80 „ | Spring & Fall | 27 |
| December to March | 69 „ | Cold weather | 26 |

The mean range of the Thermometer in the hot weather months very little exceeds that of the rains while the mortality is strikingly in excess during the latter period. But without generalizing too freely upon these limited data as the conclusions of one year or one cycle of years may be confuted by the next, this much may be said confidently that it is to our high temperature which sometimes though rarely reaches 103 in the shade and rarely falls below 70 F. we owe the form and the character of our local disease our remittent and intermittent Fevers of severe intractable type—our Diarrhœa, Dysentery, Cholera and diseases of the Liver, either by the direct effect of heat or indirectly by heat acting upon and developing the malaria of a damp and rank soil.

Conclusions

It may also be affirmed with some probability that to the loading of the air with the moisture and malaria which results from the physical aspect of the country, from its neglected drainage and other causes—the want of stamina under sickness and the low type of disease in natives of the climate are probably due, for it is notorious that generally speaking great heat and moisture co-exist only in countries very fatal to human life and vigour. It must be admitted however that much of the mortality recorded in the data for this report is fairly attributable to habits and practices for which the climate cannot be held responsible. The Cholera for example generated by the decomposing husk at the paddy godowns; the decimation of our infant population set on foot by the practice of Inoculation, the Dysentery, Atrophy, Syphilis and a host of preventible diseases which cause in the aggregate 50 per cent of our whole mortality are all examples of what bad habits may do to injure our sanitary reputation; doubtless if this form of poisoning were removed (and it is quite removable) it is very improbable that we should have to lament an inordinate death rate such as is indicated by the lowest of the figures which I have quoted. On the contrary I believe that considering our natural freedom from disease of the Turbercular class, the most fatal of all

Probable cause of the low type of our local disease particularly in Natives

Much of our mortality not fairly attributable to climate.

in Europe, and the removable character of our malarious disease, the undoubted unhealthiness of this district at present is due less to natural circumstances than to defective hygiene. The results of improved drainage can be predicated to a certainty to take the shape of proportionate freedom from Ague, Fever, Bowel complaints &c. in other words to take the shape of a greatly reduced death rate and this view is not weakened but strengthened by the consideration that much of our inordinate mortality is due to Epidemics and to the conditions which favour their origin and propagation.

Unhealthiness due less to natural circumstances than to defective hygiene

General Summary

To summarize what has been said: The causes that operate prejudicially against the public health of this district by conducing to atmospheric impurity are:—

1. The low elevation and consequent imperfect drainage of the soil.

2. The character of the cultivation which requires that water should be retained upon it rather than drained from the land.

3. The combined heat and moisture of the climate.

4. The many objectionable and thriftless habits of the people particularly when massed within narrow limits.

Add to these the disease which results from improper food such as rotten Ngapee, stinking meat, the flesh of diseased animals, or from the use of food deficient in nitrogen—from the abuse of narcotics, from dwellings defective in every requisite as to lighting, drainage, dryness of site; ventilation, water supply, conservancy; with burial places, cattle sheds, stables, piggeries, and privies close at hand, together with various noxious tidal deposits; add also the deaths which result indirectly from the neglect of Vaccination and perhaps Quarantine, and directly from the propagation of small Pox and Syphilis by uncontrolled Inoculation and infection, from meddlesome midwifery, from Snake bites in the hovels of the poor, and from the unrestrained sale of Poisons. In a word add the deaths which result from ignorance, carelessness, self-conceit, apathy and indifference, and it is thought some reasons

independent of climate will appear for an average death rate of about 40 per 1000 taking one year with another. I now proceed to reply categorically to the Sanitary Commissioner's letter No. 102 dated 26th February 1869.

For answers to paras 1 2 and 3, vide body of the foregoing report.

Topography of Town

As to para 4. The Town of Bassein is situate upon the East Bank of the river of the same name. The surface is undulating but the elevation is evidently inconsiderable from the fact that at high water much of the land in the immediate neighbourhood is submerged, and the undulations of the surface in the station itself never exceed a few feet in perpendicular height above high water mark; a laterite bed covers the whole surface of the district covered with timber when on the surface. It underlies the alluvial deposits at various depths in the swamps, marshes and low lying flats, folding round the base of the Arracan Hills on the West. This, the coast range, which bounds the Bassein district in that direction, abounds in lime stone and a good free stone towards the South and granite, green stone and hornblende towards the North. The natural drainage of the town is effected by the means of the Talaingyoung, Zaygyoung and Thingyoung creeks. Surface drains carry off water from the streets, and communicate by means of culverts with the creeks and river at the great centres of traffic—the Strand and the Zaygyoung and Talaingyoung creeks.

and District

The drainage is very imperfect in all the low lying spots as these are below high water mark, and are hence liable to be submerged.

Thoroughfares

The main lines of road branch off from the river in an easterly direction. These are intersected by others at right angles running North and South, their width is about 30 feet, except in the river bank and in Merchant Street, where they are double that width. The street situate West of the Bazaar is also of exceptional width.

How placed with regard to the monsoons.

The streets are thus placed diagonally with regard to the monsoons. The bridges are in bad repair, some of them dangerous. The pucka ones are for the most part faulty as to their foundations, the others worm eaten and decayed. This is notably the case in Talain-gyoung and Athay-gyee.

Bridges.

The bridge over the Kwan-kyagyoung is impassable except on foot and is dangerous then.

| | Acres. | As. | Pe. | |
|---|---|---|---|---|
| Area within municipal limits ... ... | 5,897 | 3 | 6 | Population 18,530 souls. |

| | Sup. ft. | Ins. | |
|---|---|---|---|
| Area covered with buildings in Athay-gye Ward | 484,812 | 9 | Population 5,012 souls=96 ft. dwelling space to each man, woman and child. This includes shops and out-offices. |

Athay-gyee is the most populous quarter of the Town, Zay-khyoung alone excepted—the superficial dwelling space (built upon) is calculated at only 69 feet for each person.

*Drainage.*—The drainage has been improved in various parts of Athaygyee and Talain-gyoung by filling in the bogs upon which the houses were formerly situated, the amount of this kind of work effected by private enterprize is very considerable. Public works of a similar kind have been long at a stand still for want of funds.

*Ventilation.*—Generally neglected. Houses of a better stamp as regards ventilation and light are rapidly replacing the hovels that formerly existed.

*Overcrowding*—Considerable—near the principal centres of traffic.

9. *Conservancy.*—6 Coolies upon 12 Rupees per month are entertained and paid for out of municipal funds. These only suffice to keep the leading thoroughfares free from nuisances. There is a Latrine near the Bazaar upon the dry earth plan, but it is never used (fortunately,) as there is no establishment kept up to attend to it. Formerly the Town Conservancy was attended to by convict Mehters and Sweepers.

This in a Sanitary and economical point of view was a great advantage to it and to the Gaol also.

10. *Water Supply.*—Ample, but far from pure. Wells numerous but neglected, and out of repair. The water from the higher level wells when filtered is bright cool and clear This is uniformly preferred by natives who use it, however (I need hardly say) unfiltered.

I cannot speak as to its chemical purity never having bestowed any attention upon the subject. This omission I hope to supply in some future report.

11. *General Health of the people.* Satisfactory. Disease is comparatively limited in its range manifesting itself chiefly in infancy and early youth. The survivors in virtue of this natural law are therefore the exceptionally vigorous. The consequence is that the number of cripples and weakly subjects is small. These die off in early life as a rule and (excepting opium consumers) the general health and animal spirits of the adult community compare favourably I think with other Asiatic races.

12. *Comparative state of health of the several sections of the community.*

The Burman element in our population is so large that comparison in this respect is by no means readily made.

The subject is interesting and will not be lost sight of.

13. *Epidemics.* None except Measles of too trifling a character to call for particular notice.

14. *Mortality in* 1868. (30 per 1,000) less than that of previous years but still high, higher than it ought to be.

15. *Endemics.* Cholera of a most malignant type occurred. Seven cases appeared sporadically in February, and 3 in March. All terminated fatally in a few hours. Choleraic Diarrhœa prevailed to a slight extent about the same time. I saw no cases however of the latter and only one of the former during life. The other case which had proved fatal in four hours without medical treatment was examined by me at the Dispensary with a view to certifying as to the cause of death.

Both I believe were typical cases of the form of Cholera *bred* here, the most characteristic features of which are the

profundity and rapid accession of the stage of Collapse and the very trifling amount of vomiting and purging accompanying it.

Nothing occurred worthy of note as the result of treatment except this which was certainly remarkable as a perhaps unusual result of the evacuant plan of treatment. The evacuants employed (marginally noted) *did not evacuate* though perseveringly administered under my own eye; on the contrary the vomiting and purging entirely ceased under their use as did likewise the pain and cramps, not a single dose was rejected or passed by stool except the first (the Calomel) some of which was vomited immediately. All this may have been due to utter absence of absorption; be that as it may the fact remains that the purgatives failed to purge and therefore it is a fair inference I think that they did not add to existing prostration as some opponents of the evacuant plan had led me to expect as a possible result.

Calomel 3 gs. followed by Castor Oil ½ oz. Carborate of Soda ½ dr. Spirits of Turpentine ½ dr. every hour.

The case terminated fatally in 14 hours, and therefore the utmost that can be claimed as the result of the treatment is that the pains of death were apparently mitigated (the man suffered no pain and very little cramps) and the fatal termination was perhaps delayed.

16. *Vaccination* may truly be pronounced to have been a total failure this season. The Lymph and scabs employed were obtained from Calcutta from the Superintendent General of Vaccination, direct. Even in the few (very few) cases in which these were tried the results were not completely satisfactory. In the three Europeans (under one year) operated upon, only two punctures were permitted resulting in only one good vesicle and cicatrix in each case and imperfect protection only. In the other two (natives under one year) only one case "took" and presented characteristic symptoms but the health of the infant was not good, its blood was in an impure state as was evident from an eruption previously existing upon the head. But as it was the only case obtainable the operation was attempted and certainly succeeded as it usually does in early infancy. The reason why the same susceptibility is not observed in older patients is not quite clear. But it is for the opponents of Vaccination to explain why with ordinary

care and skill it invariably succeeds in the virgin soil alluded to. An attempt was made by the Superintendent to induce native mothers to bring their children to him for Vaccination, and a short paper with that object in view was drawn up in the Vernacular but as it was not circulated in the neighbourhood except to the limited extent afforded by the Vernacular Press of Rangoon, its effect locally was not noticeable a copy and translations into Burmese and Sgau Karen extracted from the Vernacular Press as an appendix are enclosed and with the view of shewing what has been done in this direction.

17. *Employments injurious to health.* Nothing occurs to me as note worthy under this head except that as a rule the Burmese suffer more from the want of employment than from anything injurious to health in their ordinary pursuits.

18. *Effects of opium and gunja.* Decidedly injurious. Cases of this kind add materially to our criminal death rate.

19. *State of the Bazaars.* Satisfactory.

20. *State of the Slaughter houses.* Satisfactory except as regards their position which is ill chosen—as to the grave yards they are in a very unseemly state and are situated as a rule most objectionably right in the tract of prevailing winds.

21. *Sanitary State of Public Institutions.* Satisfactory except as regards the Dispensary here there is great want of a proper establishment.

22. *Sanitary matters* have as a rule been discussed demi-officially with the Officer in charge of the district. Some progress has been made which it is fair to assume is due in some measure to the interest thus displayed by the responsible officers. Correspondence upon the subject of a Cholera panic which occurred in February this year is enclosed as throwing light upon this branch of the Sanitary Commissioner's enquiries.

A. C. NISBET,

*Civil Surgeon, Bassein.*

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From A. C. NISBET Esq., Civil Surgeon, Bassein, to the Officer in Charge of the Deputy Commissioner's duties at Bassein, No. 7, dated Bassein the 3rd March 1869.

I have the honour to report with much regret that Cholera (sporadic as to character but malignant to a more than usual

degree as to type) has again made its appearance upon and in the neighbourhood of the river. Two fatal cases occurred on board the *Sterling* and 3 are said to have taken place on board a *Catto* lying near Tolaingyoung. Mr. Dietjen also reports the loss of two men from his godowns; I have heard of no cases occurring away from the river but I have reason to think some indisposition exists on board native crafts to answer inquiries relative to their sanitary state. The mortality afloat may thus be under stated. In both cases on board the *Sterling* the men had been ashore on the day previous to attack; both began to suffer about the same hour in the day; one died without medical aid in four hours, the other succumbed in 15 hours notwithstanding the most active efforts were employed and persevered in to the very last under my own immediate direction.

In these cases the Cholera was of a kind which may be called "dry Cholera" without doubt the most rapidly fatal form which the disease assumes. They were marked by little or no discharge after the attack in each case was fairly established.

With regard to remedial and preventive measures I can only repeat the suggestions offered upon a similar occasion in my letter No. 1 of 1868 dated January 7, to the address of the Deputy Commissioner and add that I shall be most happy to supervise and report upon any action which may be taken by you in attempting to carry out the measures which you may see fit to adopt.

Referring you to my letter of that date for the suggestions in question.

*Note.*—One additional suggestion occurs to me.

It is that the Civil Surgeon be authorized to visit and inspect vessels on public grounds and report upon their sanitary condition, water supply, and provision as to medical necessaries with the view as stated in para 2 (b) in the Sanitary Commissioner's Circular No. 11 of 1869, dated 11th January ultimo, bearing in mind the interpretation of that para as indicated in para 4. That is to say or suggest that the Civil Surgeon shall be authorized to visit on the part of the Local Authorities, to advise for the public good, and to report upon the result.

Such matters are more effectually regulated in other Ports of the Province I believe, but this much at least can be effected here without any straining of instructions that I can see.

In conclusion I am fully sensible of the fact that much of all that has been here said has appeared before in my Reports—that the topic in fact and even the mode of handling it is old and threadbare. This is merely to state that my observations of an earlier date still apply; that the march of improvement is slow; that results are satisfactory to an inconsiderable extent except in so far as it is satisfactory to trace the natural history of disease and to establish a starting point from whence to observe the results of that permissive policy which grants the utmost latitude to popular aspernations and limits Sanitary efforts strictly to those which recommend themselves to local standards of common sense.

If the problem thus submitted to officers responsible for the Public Health be difficult it is certainly not uninteresting. Coercion is an ugly word and to convince a man against his will is proverbially useless. Progress therefore in Sanitary matters without undue pressure is satisfactory in itself and promises to fructify with increasing spontaneity as the natural result of education and progressive enlightenment.

To keep prominently in the fore ground our Sanitary wants even at the risk of being tiresome and repeating oneself seems to be an useful if invidious mode of supplying them. To hold one's peace about them seems as wrong as "to cry Peace when there is no Peace" as Public opinion, in this as in other matters must be influenced by agitation, by keeping unsavoury facts steadily and persistently in view, and by pointing the lessons developed of circumstances in tracing their connection with the Public Health.

From M. C. Poole, Esqr. Assistant Commissioner, for Deputy Commissioner, to the Health Officer, Bassein, dated Bassein 3rd March 1869.

I have the honour to acknowledge receipt of your letter No. 1 of to-day's date and regret to learn from it that two fatal cases of Cholera have occurred on board the ship *Sterling*, I agree with you in considering that every effort should be made to ascertain the causes of the disease and I think that it would be well for the Health Officer to visit the shipping in the Port as you suggest for the purpose of conveying advice and offering recommendation of a precautionary nature. Your advice would doubtless recommend itself to the Captains of vessels and would also be supported by your Official position.

But I do not at present consider it necessary to authorize you to proceed in your Official capacity alone; should the disease spread and become or threaten to become Epidemic I shall not hesitate to carry out any suggestion you may propose—in the mean time I would merely suggest a continuance of that watchfulness of Public Health that you have so promptly commenced. I shall forward your letter to the Deputy Commissioner, it may be that his views may differ from mine but I think that cases of Sporadic Cholera are inseparable from occupation in the vicinity of the river at this season of the year.

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## APPENDIX TO BASSEIN HEALTH REPORT.

The Civil Surgeon of Bassein is sorry to find, that Burman parents are, as a rule opposed to Vaccination, which they erroneously look upon as the "Foreigners' Small Pox," and that they neglect therefore, to avail themselves of means (placed by Government at great expense within their reach) for preventing, and doing away with that horrible disease.

Knowing that this arises from ignorance upon the subject, he wishes to say a few words to them, hoping to help those, who have opportunities of learning the truth about it, to realize and see the importance of the matter.

Every one knows, that when a person is inoculated in the Burman fashion, he incurs the risk of dying from Small Pox, brought on by the operation. Every one who comes near him too, is liable to take the disease, and to spread it in his turn. In short Small Pox is thus voluntarily produced, and involuntarily propagated; and in this, consists the great evil of the system, as Epidemics not unfrequently originate in this way, as was the case here apparently in 1867, destroying thousands, depriving them of sight, or disfiguring them for life.

Now, the first truth I have to tell about Vaccination is, that it never does this. It *never causes* Small Pox. What it *does* cause, is a harmless pock which never kills, blinds or disfigures. No one I think ever heard (out of Bassein) of Vaccination *causing* Small Pox. Its worst enemies (for like every thing good in this world, it has enemies even among those who might know better) have never accused it of this.

Small Pox may, and often does follow after Vaccination during Epidemics, when Vaccination is comparatively inert. But any one observing its effect with any attention, when Small Pox is not "about" may satisfy himself, that the Native belief in its *causing* Small Pox is groundless, except they choose to make no distinction between a disease which kills with notorious virulence, and one that only causes some small sores and scars on the arms which, is stupid and absurd.

Inoculation then, whatever may be its advantages, produces (as every one knows) Small Pox, mildly often and even generally, but still unmistakeably Small Pox.

Vaccination (as every one *may* know if he chooses) does not. This very important point being settled, the next question is: Which is the best protector against the disease? Inoculation which keeps up the supply, and propagates the contagion, never suffering it to die out, or vaccination which, as I will now attempt to shew, destroys it,?

No one disputes, that Inoculation protects from future attacks of Small Pox, the individual upon whom it is practiced as well, if not better than Vaccination does. But this is done at the risk of his life, and the lives of others. Now what has vaccination done in this way? Admitting as every one must, that no risk of this kind is incurred. What is its value as a preventive? The answer is—Vaccination prevents Small Pox altogether. Not only one, but all are saved by it when properly performed, and strictly carried out.

Take the history of the operation in Prussia, and throughout Germany, North and South. There the operation is enforced by law, and has been for nearly half a century. And what has been the result? It may be told in three words. Small Pox is extinct. Medical teachers there, are in the habit of speaking to their pupils about it, as a disease previously very fatal and loathsome, now unknown. This is prevention, and something more. It is extinction. Here is another example of its power as a safe-guard, under a different set of circumstances.

In the Small Pox Hospitals, in various parts of Europe, where the disease is not yet stamped out in this energetic way, the preventive power of Vaccination is displayed in a very marked way. In those ghastly abodes of

suffering humanity, Vaccination of the Hospital attendants is as strictly carried out, as it is in Prussia, from a different cause viz: from their natural fear of contagion. The result is, that not a single death from Small Pox has been recorded for the last 20 years, amongst those, thus habitually exposed to the contagion.

But some may say, Vaccination has already been tried here, and has failed. And this is, to a great extent true. In 1867 the failures were numerous. The operation naturally got a bad name. Why it failed then, is easily explained. The poison of Small Pox filled the air and contaminated everything and every body. Inoculators were busy at work propagating it. The very Vaccinators had it, in and around their homes; and still, not wickedly, but ignorantly plied diligently their vocation in rivalry with the Native Inoculators. Nay the lymph itself was poisoned, by the simultaneous efforts of both upon not a few of the patients, who figure in the records, as successfully vaccinated! Need any more be said? The wonder only is, that even under such circumstances, some 1,000 people appear to have benefited to some extent by operations so conducted, the characters of which, did not transpire till it was too late.

It follows from what has been said, that to be successful, vaccination must be strictly carried out. And enough has been said I think to show, that it is harmless, and that it only requires a fair trial to convince any unbiased observer as to its value, as a safe-guard against one of the most loathsome diseases which "flesh is heir to."

But the season for operating in this part of the world is short, and is already nearly over. No time therefore is to be lost, if this healthy season is to be taken advantage of.

No one can say, how soon Small Pox may appear, or be imported from abroad, starting the Inoculators, and perhaps another Epidemic, as in 1867. There are hundreds of unprotected children, who have been born here, since that visitation. To the parents of these, these words are especially addressed, and most earnestly recommended to their deliberate attention.

A. C. NISBET,

*Civil Surgeon, Bassein.*

## REMARKS BY THE DEPUTY COMMISSIONER OF TOUNGOO ON DR. PARKER'S ANNUAL SANITARY REPORT.

*Dated Toungoo the 3rd May 1869.*

1. Dr. Parker's report is so full that it leaves little room for supplementary remarks, excepting where he takes exception to the state of the bazaar latrine, and to the accumulation of rubbish near the bazaar. In a town where there is no Conservancy Officer, the Deputy Commissioner, be he ever so active, cannot ensure that every place should be in "apple pie order" every day, and, the people are apt to get more slovenly during his repeated absences in the dry weather, during one of which apparently, the Civil Surgeon found things less satisfactory than they might be.

2. As soon as Dr. Parker's report was read, his suggestions anent dry earth conservancy were carried out.

3. Had the Civil Surgeon pointed out to the Deputy Commissioner what he considered objectionable, matters would have been righted at once and there would have been no occasion for condemnatory remarks.

4. It is admitted that the only sanitary recommendation offered to the Deputy Commissioner was immediately complied with.

5. The fort ditch is the "*bete noir*" of every one interested in the conservancy of the town.

The Executive Engineer states that projects are on the *tapis* to render it less a nuisance.

6. The Commanding Officer has promised to comply with the injunction of the Deputy Commissioner, restraining him from allowing the filth from the elephant sheds to contaminate it, in so far as removing the manure from the sheds elsewhere—but protested against the expediency of removing the sheds themselves, as suggested by the Sanitary Commissioner.

7. It is hoped that one or more of Norton's tube wells will be furnished for the use of the town and possibly if the experiment be practicable that the people will adopt them. As a sanitary measure it would be a desideratum.

A. R. McMAHON,

*Deputy Commissioner, Toungoo.*

# ANNUAL SANITARY REPORT.—TOUNGOO.

**For the year 1868.**

I. The Town of Toungoo is situated on the river Sittoung, and about 160 miles from Rangoon as the crow flies, though the windings of the river route make the journey by water about 260 miles. It was at one time a place of considerable importance, and the capital of an extensive district, but it declined subsequently to the foundation of the kingdom of Ava.

The Town proper is within the Fort Wall, a work belonging to the palmy days of Toungoo history, and lies a little inland from the river bank, but has several outlying suburbs, one of which "Oke-Chottan" lies on the bank of the river, and another "Ogone" to the South of the Town.

The Fort Wall before mentioned is a thick rampart, surrounding the whole town, and probably more than 5 miles in circumference, it has the appearance of a grassy mound, but where sections have in various places been made through it to allow the passage of roads from the Town it can be seen to have been built of brick, a very laborious, undertaking, considering the extent of the wall.

Within the large extent of ground enclosed by the Fort Wall are several open spaces of considerable size, more especially towards the western side. The Town itself is situated just within the eastern face of the rampart; further particulars with regard to it are given under answer to head V. The soil is sandy, in parts laterite and in parts a stiff clay.

I am not sufficiently acquainted with the topography of the district to enter upon a description of it.

II. The climate of Toungoo is, with slight difference, that of lower Burma generally, it has a scantier rainfall, and a more decidedly marked cold season.

III. The average annual rainfall is about 100 inches. There having been no rain-gauge in the station, the rainfall has not been registered during the past year; one which ought to have been here, was accidentally mislaid in transit and has only just arrived.

IV. The Town as I have mentioned lies within the Fort Wall, on the Western bank of the river, it is easily drained, the ground sloping gently to the N. E. in one part; and to the S. in the remainder. The drainage however sometimes becomes impeded, owing to an accumulation of mud in the water-courses dug along the sides of the roads. They are cleared once or twice a year.

V. The Town proper occupies a space just within the Fort Wall, I cannot without considerable delay obtain information regarding the superficial area occupied by it, so send the Report without. The principal street in the place is one called Main Street, but taking them in order from the N. we have first a road unnamed running past the Gaol, E. and W. then Main Street, then Bazaar Street, then a road unnamed all running from E. to W. Other streets intersecting these run from N. to S., taking them in order from the Western side they are Pagoda Street, a street unnamed, Broad Street, Gaol Road, China Street, Merchant Street.

Main Street which is one of the widest is about 25 feet from ditch to ditch, but the houses are about 5 feet further apart on each side, giving a total width of 35 feet. The others are mostly about 20 feet in width, between the ditches or 30 feet between the houses.

VI. I beg to refer to my remarks under head IV. The ditches have been cleared as usual during the past year, and a deep trench carried from the Gaol into the centre of the Fort ditch, to prevent water lodging in the neighbourhood of the Gaol.

VII. Burman houses are it is well known in general constructed without the slightest regard for ventilation, the materials of which they are ordinarily built however in some measure counteract this defect, the bamboo mat wall letting in a good deal of air. In cases of illness they close up every outlet, and cover the sick person with a thick musquito curtain.

VIII. There does not appear to be any overcrowding.

IX. None really. There is only one public Latrine and that is intended for the use of the people occupying stalls in the Town bazaar. It is in a very dirty condition and dry earth conservancy not carried out. The Burmans make use of their

own inclosures of ground for purposes of nature; most of the houses have a small place erected in the rear of the dwelling house, but their excreta are frequently not covered over. It is to be wished that Latrines for general use could be introduced in place of the system at present in force, and considering the great advantages conferred by the dry earth system of conservancy it would be well worth an effort to bring it into play.

It should however be introduced thoroughly, the mere storage of dry earth for use during the Monsoon will not meet the purpose, to be effectual the earth should be dried daily for use, as recommended in the recent report on Latrines in the Bengal Presidency.

X. The water supply appears to be in general good, there are a number of wells in the Town. In the absence of apparatus for testing the water I can merely form a general idea with regard to it.

XI. The general health of the Town is good.

XII. I am not in a position to answer this question, to do so I should require to know how many inhabitants of each race (I suppose this is intended by section) there are in the Town.

XIII. Cholera appeared in an epidemic form twice during the past year. Once it commenced in the Town close to Merchant Street, and afterwards spread, the second time it broke out in the Gaol and afterwards appeared in the Town; the first case occurring in a house close to the Gaol. The first epidemic occurred in May, the second in August; the latter has already been fully reported on as far as it regards the Gaol.

XIV. The number of deaths during the past year have been 348, but for further information under this head I beg to refer to my Report on Births and Deaths.

XV. The only disease which can, I think, be considered endemic is malarious fever, it chiefly prevails at the commencement and termination of the monsoon, in the one case before the ground is thoroughly scoured by the rains, and decaying vegetable matter washed away, in the second, during the drying process which occurs after the cessation of the rains, when malarious poison appears to be rapidly evolved, or at least if not evolved set free.

XVI. In 1867-68 as mentioned in the report for that year 267 were vaccinated. This year 1868-69 it has not been carried on at all owing to various causes. When the supply of lymph first arrived towards the close of last year, only a very few Burmans could be persuaded to bring their children for vaccination; they said, I am informed, that it was not the right time to be vaccinated, the right time with them meaning, the time when the small pox is amongst them, and frightens them out of their lazy inanimate condition. Towards the end of December I proceeded on duty to Rangoon, all the few cases before mentioned having failed, the lymph was bad, and failed not only in my hands, but also when tried by other Medical Officers in Toungoo. Nothing was done in the way of vaccination during my absence. Since the beginning of April (not included in this Report) I have succeeded in vaccinating some cases in Cantonment, from a private supply, obtained from Madras, with which the Medical Officer, H. M. 76th Regiment has obliged me; should opportunity offer, I hope to carry it on amongst the Burmans also.

XVII. I am not aware of any.

XVIII. I have no data to go upon in answering this question. As far as I have noticed I cannot say I have met with many instances of injury to health from the use of Opium or Bhang, since my stay in Toungoo, but I am far from thinking either of these habits harmless.

XIX. The bazaar is tolerably clean, and in good order. A good deal of rubbish has accumulated around it, which would be better removed, and the ground is in many places undermined with fat holes, which should be filled up.

XX. The Slaughter sheds are clean and well kept.

The Grave yards I have not seen.

XXI. The only public Institutions in the place are the Gaol and the Civil Dispensary.

The former is much improved sanitarily since it has thoroughly dried (it was occupied too early) and since ventilation has been adopted on a larger scale than was allowed for in its original construction.

The Civil Dispensary is an airy cheerful building, in an open healthy situation.

XXII. The only recommendation I thought it necessary to make during the year was one which though not exactly sanitary, yet had a relation to the health of the people.

A large number of dogs without owners were straying about the Town, and some were rabid, two or three cases of hydrophobia in human subjects also occurring, I represented the matter to the Deputy Commissioner, who after due warning had all stray dogs destroyed, thus checking an extension of the disease.

XXIII. In a previous part of this Report I have mentioned the Fort ditch, This is a broad, deep excavation, encircling the whole of the Fort Wall; it forms a receptacle for all the surface drainage of the Town, and exhales a most pestilential effluvium at the commencement and close of the monsoon. I have heard the suggestion, so do not put it forward as original, that a masonry trench constructed along the centre of the Fort ditch might remedy this state of things.

The plan would be to commence the trench at a point answering to the extreme limit of the Town, and carry it along the centre of the ditch.

All the surface drainage of the Town that could be collected, might be carried by gutters into this trench, while its position at the very lowest part of the ditch, would give it an advantage in collecting any drainage which might find its way by other channels than the gutters into the Fort ditch. The trench could easily be made with a gentle slope towards the river, and be carried into it, where nearest to the Fort ditch. This if adopted would I think be a decided advantage sanitarily, as the ditch would no longer become saturated with putrescent animal and vegetable matter.

C. R. S. PARKER,

*Civil Surgeon, Toungoo.*

# SANITARY AND PUBLIC HEALTH REPORT—MAULMAIN.

**For the year 1868.**

1. The District around Maulmain consists for the most part of low swampy land under paddy cultivation, but the Town of Maulmain itself is situated on the east bank of the estuary known as the Maulmain River, and is tolerably well elevated. The ground on which the Town is built, is undulating, and a considerable portion of the upper part of the town and the Military Cantonment, are well raised above the river, being built partly on the slope, and partly at the foot of a low range of hills, about three quarters of a mile from and running parallel with the bank of the River.

Those portions of the town however lying at the back of the above mentioned range of low hills, and the suburbs of Dinewoonquin and Mopoon, lying immediately on the banks of the river, where the banks are very low are swampy; and in these quarters the paddy cultivation in many cases extends up to the houses. Maulmain is however so well known from previous descriptions, that I think it is unnecessary to dilate further on this subject.

2. The climate of the Town and District, is characterized by great humidity, combined with a high temperature, but the heavy rainfall during the monsoon, while causing great humidity of the atmosphere, has the effect of cooling the air very considerably, and the average temperature is consequently much lower than it is in places in the same latitude, on the other side of the Bay of Bengal.

The subjoined table will shew the temperature &c. for the past year.

| Months. | Mean Maxm. | Mean Medium. | Mean Minimum. | Rainfall Inches. | Prevailing Winds. |
|---|---|---|---|---|---|
| January | 86 | 80 | 67 | ... | N. E. |
| February | 87 | 81 | 75 | ... | ... |
| March | 89 | 83 | 75 | ... | ... |
| April | 91 | 83 | 79 | 6.60 | N.E. & S.W. |
| May | 85 | 80 | 78 | 15.30 | S. W |
| June | 83 | 80 | 77 | 43.95 | ... |
| July | 81 | 79 | 76 | 31.30 | ... |
| August | 81 | 79 | 78 | 61.50 | ... |
| September | 82 | 79 | 75 | 36.75 | ... |
| October | 85 | 82 | 78 | 10.10 | ... |
| November | 84 | 81 | 75 | 5.70 | S.W. & N.E. |
| December | 82 | 72 | 67 | ... | N. E. |

3. The fall of rain during the past year was, as shown in the table, 211.2 inches. The rains set in rather earlier than usual, viz: about the middle of April, and occasional showers occurred at the end of the monsoon, nearly up to the middle of November. The greatest monthly fall of rain took place in August, in which month there was a fall of 61.5 inches.

4. A considerable portion of the Town being situated on the slope, and at the foot of a range of hills, with the ground sloping gradually down to the river bank is drained well naturally, and the low lying portions of the Town are drained by nullahs, partly natural, and partly of artificial construction. In Dinewoonquin and Mopoon however, many of the houses of the poorer classes, are built on the swampy ground along the raised roadways, their floors being raised to the level of the roads on posts and a bridge of planks, enabling the inmates to reach the road dry shod. During the monsoons these houses form islands in the swamp by which they are surrounded, and the only drainage around them is, by the occasional presence of a nullah near them.

5. The area occupied by the Town is, I am informed, 10½ square miles, giving an average superficial space of 718.8 square yards to each inhabitant of the estimated population. The roads are of fair average width, and their direction is calculated to promote free ventilation.

6. The drainage of the Town is tolerably good, with the exception already mentioned. No changes have taken place in this respect, during the past year.

7. The houses are as usual provided with ample ventilation by numerous doors and windows, but among the native inhabitants, both Burmese and Natives of India, this advantage is neutralised at night by the scrupulous closure of every door and window.

8. No overcrowding exists so far as I am aware in any portion of the Town.

9. Owing to the impoverished state of the Municipal Fund, no fixed Conservancy Establishment has been maintained for the past two years, but a Conservancy Officer, and 12 men have been entertained during the monsoons for clearing drains &c. This small establishment is of course quite inadequate to carry out properly, the Conservancy of a large town like Maulmain, but it serves to remove to a great extent, the evils which would arise were there no conservancy gang at all, from the accumulation of rubbish about the streets, and near the dwellings of the poorer inhabitants. It is much to be regretted that the Conservancy of the Town is so very defective, and I hope that measures will be taken by Government, to improve the present state of things in this respect, as the Municipal Funds cannot meet the difficulty.

10. Numerous wells throughout the Town give an ample supply of good drinking water during the greater part of the year, but in the hot weather the supply is frequently scanty, and the water impure from the admixture of mud, and deposits from vegetable, and animal substances falling into the wells, and being allowed to remain there. These evils might, no doubt, be obviated to a great extent by the periodical cleansing of the wells, but I think that the only way to secure, an adequate supply of good drinking water during the hot season would be to intercept and store in pucka tanks the water now poured down so freely on the lower land, by numerous streams and nullahs on the sides of the low hills behind the town.

11. It is highly satisfactory to observe that, notwithstanding the defective sanitary condition of the Town consequent on the bad Conservancy arrangements, the gene-

ral health of the inhabitants, during the period under report, has been remarkably good, and indeed better than it was during the previous year, of which Dr. Marr reports that:—"The Public Health has been better during the period under review, than it has been for years."

12. Maulmain has always, I believe, been considered a healthy place for Europeans and East Indians, and these sections of the community have certainly been remarkably healthy during the past year. Among the poorer classes of Natives of India, and Burmese of the same class, and especially those whose occupations have taken them much into the jungles, there has been a good deal of sickness, though less than has usually been the case in previous years.

The greatest amount of sickness and mortality has occurred among the Burmese portion of the population, but this no doubt is due, not to a greater proneness to disease among them, than among Natives of India, and other foreigners, but to the fact that the number of children and old people, are much larger among them, than among the foreign inhabitants, and that they are more exposed to malaria in working timber in the jungles.

13. There has been no outbreak of any epidemic disease in the town of Maulmain during the past year, but as usual a few sporadic cases of cholera and small pox, and a considerable number of cases of measles, occurred, both in earlier and later months of the year. The mortality from these diseases was very slight with the exception of measles, to which disease 28 deaths are attributed.

14. The mortality among all classes of the population during the past year, has been remarkably low. Indeed the mortality indicated by the Registration returns, is so very low, as to give rise to the suspicion that these returns may be incorrect.

If the returns be correct, the rate of mortality in Maulmain for the year 1868, has been about 9 per 1000, below the average death rate in England. This may be the case, but it does not appear probable—at the same time I must observe that since the system of Registration was introduced in Burma, the rate of mortality in Maulmain, as recorded in

the returns, has always been considerably below the rate in England.

15. The prevailing and most fatal diseases among the inhabitants of Maulmain during the past year, have been Fever, Diarrhœa, Dysentery and Atrophy, and among Children, Convulsions and affections of the Lungs; but besides these diseases, Bronchitis, Rheumatism, Syphilis, Ulcers, Anasarca, and other diseases dependent on debility, have also frequently occurred. The majority of the cases of Fever, which were, with few exceptions of either the Intermittent or Remittent type, occurred among Burmese, who are, as has already been stated, much more exposed to malarious influences, than the Natives of India and other aliens, from the fact that the working of the timber in the forests in which large numbers of people are employed, is almost entirely carried on by Burmese.

To the same cause may be attributed the greater prevalence among them of Bowel Complaints, depending, I have no doubt, on malarious poisoning and its effects. Diarrhœa and Dysentery were next to fever, the diseases of most frequent occurrence during the past year, the subjects being either people, generally Burmese, who had been exposed to the poison of malaria, or indigent and ill fed natives of India or Burma, in whom, insufficiency or indigestibility of food, and inadequate protection from the vicissitudes of the climate, with, consequently exposure to cold and damp, appeared to have been the causes of the disease.

Atrophy gave rise to considerable mortality, both among Burmese and Natives of India, the disease among the former being for the most part, the result of previous neglected jungle fever, with enlargement of the spleen, and among the latter depending, generally, on previous Diarrhœa, Venereal disease, or insufficient and improper food.

Syphilis has been very prevalent, though the mortality from this disease has been low. Venereal disorders have been most prevalent among Natives of India, but a large proportion of the European Patients, as well as Natives of India and Burmese in the General Hospital, have generally been suffering from these diseases.

Bronchitis and Rheumatism have been by no means uncommon, occurring for the most part during the rains. The former was caused by exposure to damp and cold, or sudden vicissitudes of temperature, but as a rule the latter could be traced to previous syphilitic disease.

The principal diseases among chileren have been Inflamation of the Lungs, Croup, Convulsions, Bowel Complaints, and Measles. Burmese Children are terribly mismanaged by their mothers, and it is really surprising that any of them survive the perils they are exposed to during infancy and childhood, from want of clothing, early cramming with rice, improper food and general mismanagement, as it is, I am convinced that large numbers of naturally healthy children, die from these causes.

16. Only 535 cases were vaccinated during the year under review, and of these 75 were unsuccessful, giving a percentage of more than 14 per cent; but among these failures are included a considerable number whom it was endeavoured to vaccinate from tubes, the lymph contained in which failed to produce a result in any of the children operated on. The operation is not in favor among native inhabitants, and nothing short of compulsion will, I think, serve to extend its benefits in this country as in England.

17. I am not aware that any of of the people follow employments, calculated to injure their health, unless the occupation of the Timber traders, and their assistants be held to come under this heading.

18. From the few opportunities I have had of observing the effects of Opium smoking or eating, and the consumption of Gunja and Bhang I am decidedly of opinion that all of these drugs produce a baneful effect on those using them, but that this effect depends greatly on the quantity taken, and whether the drugs are taken habitually or only occasionally.

19. The Bazaars are kept as clean as possible considering the means available for this purpose.

20. The slaughter house is kept clean and looked after by the Conservancy officer, under the supervision of the Magistrate. The grave yards are kept in good order.

21. The Sanitary state of all the public buildings, is satisfactory, and requires no special remark.

22. The only recommendations of any consequence made during the past year on Sanitary subjects, have been the suggestion that the pucka water tanks mentioned in a former paragraph, should be constructed to increase the supply of drinking water in the hot weather, and a recommendation that a Lock Hospital should be built near the General Hospital.

In concluding this report I have merely to add, to what I have already written, that the absence of epidemic disease, and the low rate of mortality during the past year, speak volumes in favor of the salubrity of Maulmain, and are subjects for unmixed satisfaction.

B. T. SUFFREIN,

*Officiating Civil Surgeon, Maulmain.*

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## REMARKS BY THE DEPUTY COMMISSIONER

### SHWE-GYEEN DISTRICT.

The Civil Surgeon's report is complete and comprehensive, and requires but little comment.

2. The Sanitary condition of the Town of Shwè Gyeen is as good as it possibly can be under existing circumstances; several schemes for its improvement have been suggested at various times but as a great difference of opinion exists as to the nature of the requisite works, it is to be feared that Shwè Gyeen will, for some years to come, retain its unenviable notoriety as the unhealthiest Town of British Burma.

3. In three other Towns of the District a Municipal tax has been in existence some years. Though their funds are solvent and can well bear the charge, Government steadfastly refuses to sanction any Conservancy Establishment for the Towns of Sittang, Winpadaw, Kyeikhto. There is therefore much more difficulty now in keeping these Towns clean than there was before the Municipal tax was imposed. The people naturally object to perform work for the execution of which they pay others.

4. The large villages of the District have improved of late in their Sanitary condition. The people generally are becoming more cleanly in their ways, and manner of living.

5. A commencement has been made of sinking a few wells in these places where the drinking water is least pure. In course of time every village should have its own well. The people will not commence these works themselves considering that they cannot require what they have done so long without, and because it is contrary to custom.

6. The general health of the District has been very satisfactory.

It is a matter for regret that better precautions are not taken to ensure an early supply of good vaccine lymph. There were hundreds of children waiting to be vaccinated but such great delay occurred that the Vaccinator had not time to extend his visits beyond the suburbs of this Town.

C. E. WATSON.

*Deputy Commissioner Shwè Gyeen.*

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# ANNUAL SANITARY HEALTH REPORT—TOWN OF SHWE-GYEEN.

**For the year ending 31st March 1869.**

Topographical description of station and district generally.

The Town of Shwè-Gyeen is situated in 17°55′56″ North latitude, and 96° 51′. 15″ East longitude at an elevation of 90 feet above the sea level and at the junction of the Sittang and Shwè-Gyeen Rivers. The houses run for some distance along the banks of both rivers. The town is usually flooded every year to a depth of 2 or 3 feet. To the back of the Town lies the Cantonment on a well elevated laterite hill. To the East at a distance of about 15 miles run high ranges of mountains in a general direction of North and South and extending Eastward far beyond the Salween river into the Zimmai and Karenee States. The height of these mountains vary from 3000 to 5000 feet. To the North East at a distance of about 70 miles exist extensive pine forests, where during 3 months of the year ice is met with, and during the hottest season the thermometer does not rise above 80° in the shade. The other portion of the district comprises the extensive valley of the Sittang; of a rich alluvial soil, small isolated patches of paddy cultivation are met with in the vicinity of the numerous small villages. The waste land consists for the most part of dense tree

jungle, with elephant grass along the banks of the rivers and streams.

2. Nature of climate and atmospheric phenomena.

The climate is dry from the middle of October until the middle of May. Heavy dews at night and fogs in the morning prevail during January and February. The day heat is excessive from March till May, but a refreshing breeze generally sets in about 6 or 7 P. M. The nights and mornings are cool throughout the year. During the dry season the air is loaded with smoke and particles of burnt matter, from jungles being on fire on all sides. The usual extreme of summer heat seldom exceeds 104° and the cold of the Winter months 52° Fahrenheit.

3 Rainfall

The fall of rain amounted for the season to 187 inches and 5 tenths. The monsoon commenced at the end of May and terminated as in former years in October. It was ushered in by the usual thunder storms and gales of wind, and at its termination the same phenomena in a milder form were experienced.

4. Position and drainage of Town.

The Town is well drained; several good roads run through the Town and have deep drains along their edges.

5. Extent of ground occupied by Town, roads, description of their positions, number and width generally to show the ventilation in regard to prevailing winds. Average superficial space approximately to each inhabitant of estimated population.

The town of Shwè-Gyeen is about 1½ miles in length by 1 mile in breadth—six main roads varying in breadth from 40 to 60 feet run in a general direction from East to West. Eight cross roads of an average width of 40 feet intersect the main roads at right angles. Each inhabitant of the town has approximately an average area of 600 square feet.

6. Condition of Town as regards drainage, noting any changes or improvements made during the year.

The Town is generally clean. The drainage having been greatly improved. During the past year wooden houses having been substituted for many of the old and delapidated bamboo dwellings. Streets have been cleared, new roads constructed, and old ones repaired.

7 Ventilation of houses.

Perflation is entirely by means of doors and windows.

8. Over crowding.

No overcrowding has taken place during the year.

9. Conservancy.

The provision for Conservancy is on the whole very satisfactory.

10 Water Supply. Condition of wells.

The country is plentifully supplied with water from natural springs and rivers, and water for all purposes and of good quality is supplied from wells. The wells are all in good condition.

11. General health of Inhabitants

The public health of Shwè Gyeen during the period under review has been good.

12. The Comparative state of health of the several sections of the community

The health of the inhabitants of all races has been on the whole satisfactory.

13. Epidemics history and progress of disease, date of appearance noting situation of first cases, date of cessation, direction of approach &c. &c.

There was no epidemic during the year, but a few cases of measles and chicken pox made its appearance amongst children in Town in the months of January and February in a mild form.

14 Mortality.

The number of deaths during the year amounts to 162, which shews a decrease of 37 over that of the year previous, and gives a death rate of 21.96 per 1,000 living.

15. Endemics

The endemic diseases of Shwè Gyeen, those which injure the health or destroy the life of the inhabitants are fevers and dysentery.

16 Success or otherwise of Vaccination.

The result of Vaccination during the past year has been tolerably satisfactory, as it was only confined to the Town of Shwè Gyeen, and a few villages close by, as good Vaccine lymph was not received till very late in the season.

17 Employments injurious to health.

With regard to the occupation of the people, the Burmese and Karens who compose by far the largest portion of the population are cultivators of rice, petty traders, shop keepers, boat owners, &c., which employments do not appear to be prejudicial to health.

18. The effect of Opium smoking or eating Gunja and Bhang on the population. Are they injurious or otherwise?

In the persons of those who are addicted to the use of these drugs, their systems are under *par* and inadequate to the wear and tear to which they are exposed in the common avocations of life. The use of in-

toxicating drugs is however confined almost entirely to the few Chinese and Natives of India residing in the District.

19. State of Bazaar.

19. The Bazaar is in good order and creditably clean.

20. State of Slaughter House, and Grave-yards.

The slaughter shed is situated beyond the precincts of the Town, sufficiently removed from human habitations to preclude any fear of the Public Health being influenced by it. The European Burial ground is situated at a good distance from the Town, within the limits of the Military Cantonment. The Burmese and others have their places of burial far out of sight, about 2 miles from the Town, the place is known by the number of Zayats and Monasteries that surround it.

21. Sanitary state of all the Public Institutions.

All the Public Buildings are in good order, sanitary measures carefully observed.

22. Note all recommendations of importance made during the year to the Local Authorities on Sanitary matters.

Recommended that sweepings of decayed vegetable matter of the Bazaars should be removed outside of the enclosures, and burnt or buried, also that the cleaning and weeding of the public places generally should be attended to. All suggestions made by me to the Magistrate of the Town were attended to and carried out.

Any additional remarks thought necessary.

A plan is now under consideration for the more effectual drainage of the Town, by converting surrounding swamps into tanks, and by so arranging the drainage, that on the subsidence of the annual floods the Town may be left dry, and free from the numerous pools of stagnant water which for years past have bred fever and dysentery, and rendered this Town one of the most unhealthy in British Burma.

G. J. COOPER,
*Honorary Assistant Surgeon,*
*In Civil Medical Charge Shwè Gyeen.*

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# SANITARY REPORT—STATION OF TAVOY.

**For the year 1868.**

Topography. The town of Tavoy, lies in North Latitude 14° 50″, and East Longitude 98°. It is situated in

the alluvial valley on the East bank of the Tenasserim river, which takes a course from North to South, running parallel with the Ghats & discharges itself into the sea about 50 miles from the town.

2. NATURE OF CLIMATE AND ATMOSPHERIC PHENOMENA.—The climate of Tavoy is salubrious.

SEASONS. The seasons like other stations in Burma are the cold, hot, and rainy. The cold weather sets in about the month of November, and continues until the end of February. The hot weather lasts from March till June, when the rainy weather sets in and continues until October. The commencement and the breaking up of rain are attended with much thunder and lightning.

The Meteorological phenomena observed during the past twelve months are recorded in the subjoined Register.

*Register of Meteorological Observations.*

| Months. | Barometer. | | Thermometer dry bulb. | | Thermometer wet bulb. | | Rain Guage | |
|---|---|---|---|---|---|---|---|---|
| | Max. | Min. | Max. | Min. | Max. | Min. | Inches. | Tenths |
| January 1868... ... | ..... | ..... | 80° | 60° | ..... | ..... | ..... | ..... |
| February „ ... ... | ..... | ..... | 84° | 62° | ..... | ..... | ..... | ..... |
| March „ ... ... | ..... | ..... | 90° | 74° | ..... | ..... | ..... | ..... |
| April „ ... ... | ..... | ..... | 88° | 74° | ..... | ..... | ..... | 6 |
| May „ ... ... | ..... | ..... | 90° | 72° | ..... | ..... | 10 | 5 |
| June „ ... ... | ..... | ..... | 90° | 74° | ..... | ..... | 45 | 7½ |
| July „ ... ... | ..... | ..... | 86° | 70° | ..... | ..... | 39 | 5 |
| August „ ... ... | ..... | ..... | 84° | 74° | ..... | ..... | 53 | 7½ |
| September „ ... ... | ..... | ..... | 84° | 76° | ..... | ..... | 36 | 3 |
| October „ ... ... | ..... | ..... | 90° | 76° | ..... | ..... | 4 | 9 |
| November „ ... ... | ..... | ..... | 88° | 68° | ..... | ..... | 2 | 4 |
| December „ ... ... | ..... | ..... | 85° | 60° | ..... | ..... | ..... | ..... |
| Total... | ..... | ..... | ..... | ..... | ..... | ..... | 193 | 7 |

The prevailing winds during the year are N; N. E; W; S. W; E; N. E; and West.

3. RAINFALL. The fall of Rain registered during the year has been 193 inches and 7 tenths.

4. DRAINAGE. The drainage of the Town is carried on by the large creeks that intersect it, through the agency of which all rain water &c. are emptied into the river. The road-side drains which are open and unbricked also assist in removing all surface water and accumulations.

5. EXTENT OF GROUND OCCUPIED BY THE TOWN, ROADS, DESCRIPTION OF THEIR POSITION &c. The extent of ground occupied by the town is 1½ Square miles. There are four large roads running North and South about 40 to 60 feet broad, these are the Commercial road, Victoria road, MacFarquhar's road and Stevenson's road, and there are three large roads of about 50 feet broad in the direction of East and West, the Siam road, the Burney's road and Haughton's road, besides these there are several small roads of 25 to 30 feet broad intersecting the above roads; the roads are large and numerous enough to allow ventilation.

The town contains a population of 14,518 and the district 54,231 souls; of the former 6,804 are males, and 7,714 females, of the latter 26,981 are males, and 27,250 females. The number according to Races stands as follows, 54,527 Burmese, 4,997 Talians, 6,196 Karens, 1,731 Chinese, 118 Malays, 16 Toungthoos 62 Shans, 422 Hindoos, 613 Mohammedans, and 67 Christians—making a grand total of 68,749 souls.

The Burmese population preponderates over that of every other Race being more than three-fourths of the whole, and the proportion of males to females of all classes stands as 65 to 68 almost on a par with European nations.

The area of the Town is 1½ Square miles and that of the District 7,198 Square miles, giving an average of 9 souls to each Square mile.

6. VENTILATION OF HOUSES.—The houses in Tavoy are built generally 2 or 3 feet from the ground, and some are raised a little higher. All are built almost on the same principle and the houses possess but very little ventilation as they are ill furnished with doors and windows.

7. OVERCROWDING.—The Northern part of the town, by the river side is the only quarter where the houses, occupied

chiefly by fishermen and potters, are mostly crowded. But in the other quarters of the town the houses are built apart from each other and crowding does not take place.

8. CONSERVANCY.—There is only one Public Latrine attached to the Public Offices where the dry earth system of Conservancy is carried out, and the night soil removed to a distance in the jungle. Latrines are also erected near every house on the cess-pool principle, some of which are exposed to view, and otherwise objectionable—unless these are properly built, isolated from the eaves of the houses and have a good deep pit they become a nuisance.

A great number of private Latrines are also built over the creeks that intersect the Town.

Any attempt to carry out the dry earth system of conservancy in the town would at present prove abortive. The old state of things must continue until municipal laws are brought into operation and the people made to practise home conservancy and taught the principles of domestic hygiene.

9. WATER SUPPLY. CONDITION OF WELLS.—Fresh potable water is to be had from wells situated about ½ a mile from the river, those in the neighbourhood of the river become brackish and undrinkable in the dry weather when they require to be cleared out—the water then becomes less brackish and fit for use. There are a great number of wells in the town which supply abundance of good water for all purposes.

10. GENERAL HEALTH OF INHABITANTS.—The public health of Tavoy, during the period under review, has been upon the whole, good. The most prevalent diseases during the year have been Fevers, in all the forms from the common Febricula, to the aggravated Remittent or continued kinds. But the type most generally met with is the common ague which soon yields to the ordinary treatment. Diseases of the Respiratory system and those of the Stomach and Bowels were also as usual prevalent in the wet weather.

Skin diseases, such as the common Itch, Ringworm, and cases of Ophthalmia were also treated during the year.

Wounds of various descriptions were also treated, a large number of the Juveniles have also received treatment at the Dispensary for intestinal worms.

11. HEALTH OF THE POLICE.—The health of the Police, stationed at head quarters had been during the year, good. The strength of the Force at this station consists of one Superintendent, two Inspectors and 245 men. Only one death occurred in a constable, a man of dissipated habits, who contracted Fever, in the district, while out on duty, and succumbed to the disease in a few days.

HEALTH OF THE PRISONERS. The general health of the Prisoners has been good during the year. There were 12 admissions into Hospital and no deaths. The strength of the Lock-up has been 15.6 and the daily average sick 0.3.

12. EPIDEMICS. There have been no epidemics of any kind during the past year.

13. MORTALITY.—The number registered during the calendar year has been 292. Males 157 and females 135 ; giving a per centage of 2 to the population of the town, which stood on the 31st December 1868, as follows ;

Males 6,804 and Females 7,714. The causes of deaths have been,

| | *Males* | *Females* |
|---|---|---|
| Fevers ... ... ... ... | 60 | 60 |
| Diseases of the Stomach and Bowels | 52 | 34 |
| Disease of the Lungs ... ... | 15 | 12 |
| Child Birth ... ... ... ... | ... | 5 |
| Disease of the Brain... ... ... | 5 | 2 |
| Stillborn ... ... ... ... | 13 | 8 |
| Dropsy ... ... ... ... | 4 | 3 |
| Old Age ... ... ... ... | 4 | 4 |
| Accident ... ... ... ... | 2 | ... |
| Scrofula ... ... ... ... | ... | 1 |
| Abscess ... ... ... ... | 1 | ... |
| Chlorosis ... ... ... ... | ... | 6 |
| Syphilis ... ... ... ... | 1 | ... |
| Total..... | 157 | 135 |

Ages under which deaths have taken place, are as follows :

| | *Males* | *Females* |
|---|---|---|
| Stillborn ... ... ... ... | 13 | 8 |
| Under 1 month to 1 year ... ... | 30 | 19 |
| From 1 to 5 years ... ... | 34 | 20 |
| „ 5 „ 10 „ ... ... | ... | 1 |
| „ 10 „ 20 „ ... ... | 1 | 3 |
| „ 20 „ 30 „ ... ... | 11 | 13 |
| „ 30 „ 40 „ ... ... | 10 | 14 |
| „ 40 „ 60 „ ... ... | 20 | 15 |
| „ 60 „ 70 „ and upwards ... | 38 | 42 |
| Total..... | 157 | 135 |

The greatest number of deaths has taken place among the Juveniles and those advanced in years.

14. ENDEMICS.—Diseases peculiar to this place are those affecting the stomach and bowels and the lungs, fevers, skin eruptions, worms, and ophthalmia.

15.—VACCINATION.—The Vaccinator's Register shows that 74 cases have been vaccinated during the year 1868, of this number 56 proved successful, 11 unsuccessful and 7 doubtful. All the cases were vaccinated within the precincts of the town, and no attempt has been made as yet to vaccinate in the District.

16. EMPLOYMENT OF PEOPLE, ITS INJURIOUS EFFECT ON HEALTH. The men are generally engaged in cultivating, and some of them are employed as carpenters, blacksmiths, fishermen, and petty traders. The women are employed in weaving, bazaar selling, and the ordinary domestic duties. These several occupations do not appear to exert any unusual injurious influence on their health.

17. STATE OF THE BAZAARS.—There are two public markets in the town. One, the property of Government is situated on an open piece of ground to the East of the Court House, and about 35 yards from it. It is an old thatched building and well ventilated on all sides. The Bazaar is held from 7 to 12 o'clock in the forenoon daily and has a Goung and a Piyadah to look after its cleanliness.

The second market is a low thatched building situated on the side of Victoria Road in a crowded part of the town and belongs to a private individual. It is kept open from 2 to 6 P. M. daily.

The markets are well stocked with articles of consumption, as rice, pork, fish both fresh and salted; prawns, venison, vegetables of all kinds, fruits of every kind, and nga-pee; and also of wares manufactured in the place and those brought in from other places.

18. THE STATE OF SLAUGHTER HOUSES AND GRAVE YARDS:

There is no place set apart for slaughtering animals. Occasionally goat's flesh and seldom beef are brought round for sale, by individuals at whose private dwellings the animals are slaughtered.

BURIAL GROUNDS.—The burial places for the Christains and other denominations are situated at considerable distances from the town and are kept clean and in good order.

19. SANITARY STATE OF ALL PUBLIC INSTITUTIONS:—

1st. THE COURT HOUSE.—Is a well ventilated pucka building, situated on a high and sloping piece of ground—attached to this building is a Latrine, where the dry earth system of conservancy is carried on and its cleanliness is attended to.

2nd. THE CIRCUIT HOUSE.—Is an old wooden building, well raised from the ground and is very accommodating, but it stands in need of sundry repairs and requires a fresh thatched roof as also the out houses attached to it want roofing and its compound clearing of the over grown vegetation.

3rd. THE TREASURY.— Is situated in the body of the Court House and is in good order.

4th. The POLICE OFFICE.—Is also situated in the main building of the Court house; and is in good order.

5th. THE POLICE MAIN GUARD.—Is a neat little building situated in MacFarquhar's Road and to the West of the Circuit House. The building and the compound are kept clean and fenced all round, on the anterior aspect of the building is a sign board indicating its designation.

6th. THE LOCK-UP.—Is situated in a square piece of ground in the town, between Siam and old Gaol roads, has a dilapidated bamboo spiked fence about 10 feet high.

There are five large wards for accommodation of prisoners viz: 1 sentenced prisoner's Ward capable of holding 18, under trial prisoner's ward for 12, 1 hospital ward to accommodate 14: 1 civil prisoner's ward calculated to contain 5; 1 Women's ward for the accommodation of 9 females, and there is a small ward attached to the hospital, which is capable of accommodating 3.

The wards are numerous and more in number than the requirements of the station, as the daily average strength for the past year (15.6) indicates.

The wards are in a tumbling down condition and not likely to stand out much longer, but as it is reported that a new Lock-up is to be erected, further comments on the subject will be unnecessary. It is to be hoped that the contemplated building may soon be commenced with and completed for the accommodation of our prisoners.

The enclosure of the Lock-up is a square; and measures about 290 feet on each side.

7th. THE CIVIL DISPENSARY,—Is well situated and occupies a central position. It faces the Court House and is situated at a considerable distance from it. Is very spacious and well ventilated on all sides, attached to the building are a Privy and a Cook House. The cleanliness of these buildings are attended to.

20. THE EFFECT OF OPIUM SMOKING OR EATING GUNJAH AND BHANG ON THE POPULATION WHETHER INJURIOUS OR OTHERWISE.—I believe Gunjah and Bhang are not used by the Burmese but are consumed by the Natives of India, the effects of the narcotics are manifest, as the generality of them appear emaciated and have the eyes peculiar to those habituated to their use.

The Chinese eat and smoke Opium as also a greater part of the Burmese, as is apparent in the glassy sunken eyes and withered yellow countenances presented by these unfortunate individuals.

P. J. PAUL,

*In Civil Medical Charge, Tavoy.*

# ANNUAL SANITARY REPORT.—TOWN OF MERGUI.

**For the year 1868 ending 31st March 1869.**

Topographical description

1. As I have had charge of the station for less than 3 months it would be useless for me to attempt to give a topographical description of the Town and District. I must therefore leave this subject for the next annual report.

Climate

2. During my short period of office (since 19th January 1869) I have found the climate of Mergui of the most agreeable. The mid-day sun is most powerful, but there is the advantage of a fine sea breeze which prevails almost at all times. The nights are cool and pleasant.

The following table gives the Thermometric observations for the year:—

| Months. | Mean Max. | Mean Med. | Mean Min. | Rain fall. In: | Rain fall. Tenths | Prevailing Winds. |
|---|---|---|---|---|---|---|
| April 1868... | 90 | 88 | 76 | 3 | 5 | N W. S. & S W. |
| May „ ... | 89 | 86 | 77 | 36 | 4 | N W. S W. & S. |
| June „ ... | 85 | 82 | 76 | 28 | 3 | N W. S. & W. |
| July „ ... | 82 | 80 | 75 | 31 | 1 | S W. |
| August „ ... | 81 | 80 | 75 | 32 | ..... | S W. & N W. |
| September „ ... | 86 | 80 | 75 | 27 | 4 | S W. & N W. |
| October „ ... | 90 | 86 | 75 | 9 | 9 | S W. & N W. |
| November „ ... | 89 | 74 | 73 | 5 | 3 | N E. & N N E. |
| December „ ... | 88 | 78 | 64 | ..... | ..... | N E. |
| January 1869... | 88 | 79 | 61 | ..... | 1 | N E. & E. |
| February „ ... | 90 | 88 | 70 | ..... | 7 | N E. & E. |
| March „ ... | 90 | 89 | 74 | ..... | 5 | N E. S W. & S. |

Rainfall.

3. The rainfall will be best seen from the above table. It would appear that the entire rain fall for the year amounted to 175 : 2 Inches. The greatest amount of rain fell in May and the least in December.

Position of the Town

4. The position of the Town is advantageous and is mainly built on several hills lateritious sandstone at the mouth of the Tenasserim river. To this position there are two drawbacks first, the amount of jungle surrounding the Town, and second, the river facing. The river facing consisting as it does of an extensive mud flat, extending to the full length of the town must in some measure affect the health of the inhabitants. Many houses have been erected on posts extending out over the flat. The inhabitants of these dwellings are in the habit of throwing refuse and other offensive matter under their houses, and as this portion of the flat is but partially washed at high water, a great portion of the refuse is left behind, and most offensive odours at times arise from its accumulation. The construction of a Sea wall would in a great measure remove the evils mentioned, and would be a great boon to the inhabitants.

Extent of ground occupied by the Town

5. The superficial area of the town is 133 acres; this would give a superficial space of 69 yards square to each inhabitant of the estimated population. The width of the roads is nearly uniform being about 10 to 12 yards. The direction of the three principal roads is nearly North and South these are intersected at intervals by roads nearly East and West. In the South end of the town the houses are very thick on the ground. No proper roads exist, the rows of houses being merely separated by foot paths not more than 4 yards wide.

Drainage

6. The drainage of Mergui is on the whole good; an exception must be made as regards the lower part of the Town where the drains are constructed on almost a dead level. These drains are situated not more than two or three yards from the mouths of the wells. The people being in the constant habit of bathing at the wells the water so used stagnates in the drains, which often contain refuse and other matter, and as these drains are not pucka, I cannot but think that some portion of this stagnant water must find its way back into the wells. I am not aware of any improvement during the year under review.

Ventilation.

7. From my own observation I consider the ventilation of the Burmese houses is good. I do not think much improvement could be made on their present system of building.

Overcrowding

8. This does not appear to exist in Mergui.

Conservancy.

9. The Conservancy of the streets of Mergui is on the whole good. The drains, however, especially those near the wells require greater attention. In some parts of the Town as the South end and the beach, I cannot say much for the Conservancy of the inhabitants themselves.

Water supply

10. The water supply of Mergui appears to be plentiful especially in the deeper wells. The shallower wells during February and March contained no more than 6 inches or a foot of water. I have examined the water of several wells on the Strand and also of those further from it. It is clear and although the water of the shallower wells, especially those of the Strand, is slightly brackish, this does not appear to be the case in the deeper wells. I am not aware of any improvements having been made in the old wells during the year. Two new wells, one in a good position, have however been sunk.

General Health of Inhabitants.

11. The general health of the inhabitants is on the whole good. Their appearance is that of a well fed and satisfied race. If their food were of a better character, I am of opinion a stronger or more healthy race would not exist.

Comparative state of health of the several races.

12. The general health of the Natives of India in Mergui is good, as also is that of the Chinese, and appears on the whole to be better than that of the Burmese.

Epidemics

13. In the latter end of February the Town was visited by Cholera but of a very mild type and continued so up to end of the year. The first case occurred in the south end of the Town on the 26th. This portion of the Town is one of the dirtiest. Six deaths took place in February, 5 more up to

14th March, and the latter part of March 19 deaths occurred. I am disposed to attribute this visitation in part to the unwholesome character of the people's food, especially to the large quantities of unripe fruit &c. which they eat and with which the Bazaar at this time of the year abounds, and the filthy state of the underneath portion of the houses in some of the dirtier portions of the Town.

The following were the measures adopted on the 1st outbreak:-

1. Notices were issued requesting the people to abstain from eating unwholesome vegetables and unripe fruit Also to clean up all rubbish from beneath their houses, and set fire to the same.

2. Notices were also posted requesting the people to apply at the Hospital immediately if diarrhœa should occur and informing them that the Civil Surgeon and Apothecary were willing to visit all sick persons at their own houses—Lastly House to House visitation.

Small Pox.

Two cases of Small Pox were brought down from Rangoon, one in February and one in March. The February case was visited on board the "Kathoo" and supplied with Medicines, he however died. The March case escaped on shore and took up residence in some gardens ½ a mile out of Town he died—and one case is at present in existence in the same house. More careful supervision of vessels coming into Port especially those from infected Towns is required.

Cholera at Palaw

In the latter part of February the Deputy Commissioner reported to me the existence of several cases of Cholera at Palaw, he described it as being of a mild character.

On being requested to forward medicines to the Myooke of the village I at once did so- together with full instructions, after this no report was received from Palaw for nearly 3 weeks, at the end of that time the Myooke reported the entire disappearance of the disease—altogether 26 deaths took place.

Mortality.

14. The mortality of Cholera as shown above was:--

| | | | |
|---|---|---|---|
| In Mergui | ..... | ..... | 30 deaths. |
| In Palaw | ..... | ..... | 26 deaths. |

The mortality of Small Pox was:—

In Mergui ..... ..... 1 death.
In Campiah ..... ..... 1 death.

Endemics. Fevers

15. By far the most prevalent and fatal disease during the year has been fever, mostly of a Remittent type. It does not however appear to have been so prevalent as in the previous year. This year but 80 deaths have occurred as against 109 last year. July and August are the months in which most fever exists.

Dysentry and Diarrhœa.

These two diseases appear to have been unusually prevalent during the year. Dysentery more especially, there being 33 deaths as against 12 last year.

Vaccination.

16. As these were only commenced in good earnest in February—the number for the year must appear small. The following table shows at once the number of cases.

| Months. | Vaccinated. | Successful. | Unsuccessful. | Total. |
|---|---|---|---|---|
| December 1868 ..... ..... ..... | 8 | 5 | 3 | 8 |
| January 1869 ..... ..... ..... | 5 | 4 | 1 | 5 |
| February " ..... ..... ..... | 21 | 16 | 5 | 21 |
| March " ..... ..... ..... | 89 | 61 | 28 | 89 |
| Total ..... | 123 | 86 | 37 | 123 |

The number of failures is large but this is due in a great measure to the fact that operations had to be started with matter supplied from Rangoon—and many failures were the result.

Employment injurious to health.

17. I am not aware of any employment injurious to health—strictly speaking no doubt the fishing and agricultural trades of the people entail at times great exposure to the weather and

to malarious influences, and may in some measure explain the prevalence of Fever.

Effects of Opium &c

18. From my short experience of Mergui I am unable to form an opinion on this subject.

Bazaars

19. The Bazaars are two in number one a Puckah building near the beach and the other a wooden building situated in Krowlay. Both Bazaars have during my stay here being kept in first class condition.

Slaughter House and Grave Yard

20. I am only aware of one slaughter house in the town, it is situated in a house on the beach near the wharf, the condition is satisfactory.

The grave yards are situated about 3 to 4 miles out of town on the Tank Road. They are well kept. I have failed to observe anything about them that would shock the eye of the most sensitive.

Sanitary condition of Public Institutions

21. The Sanitary condition of the Hospital is good—it however urgently requires a dead house. At present postmortem examinations have to be made in the wards. The Sanitary condition of the Gaol is also good and requires no remarks.

Communications with Local Authorities

22. In January, the Deputy Commissioner was communicated with on the subject of the filthy state of the drains near the wells, also on the subject of the habit of the people of bathing near the wells.

In the latter part of February the Deputy Commissioner was communicated with on the subject of the Cholera then commencing.

C. W. E. FOSTE
*Civil.*

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# ERRATA.

Page 9, Para. 14 *for* " effect the people" *read* " affect the people."

Do. 11, „ 18 *for* " physical characters" *read* " physical character" *for* " vary " *read* " varies" *for* " and exerting an influence &c.," *read* "and exert &c."

Page 16, Para. 26 *for* " The plan of slaughter house" *read* " The slaughter house."

Page 18, Para. 32 *for* " in consultation with Colonel Ardagh" *read* " after consulting &c."

Page 23, Para. 36 *for* " I also solicited information as to what the probable expense &c., *read* " what probable &c."

Page 27, Para. 40 *for* " which" third line *read* " as"

Page 37, Para. 54 *for* " Madras Budget" *read* " Madras Military Budget."

Page 39, Para. 66 last line but one *for* " extended" *read* " expended."

Page 45, Para. 67 *for* " contagium" read " contagion" and *for* " mhcters" " mehters."

Page 47, Para. 73 *for* " He says (Principal Inspector General)" *read* " He (Principal Inspector General) says."

Page 57, Para. 86 *for* (second line) " 2nd April" *read* " 15th April."

Page 56, Para. 86 *for* (ninth line) " 20th April" *read* " 5th March."

Page 72--Foot note--*for* " susequently" *read* " subsequently."

Page 73, Para. 128 last line but one *for* " affect" *read* " effect."

# MEMORANDUM

BY

MAJOR GENERAL A. FYTCHE, C. S. I. CHIEF COMMISSIONER AND AGENT TO THE GOVERNOR GENERAL.

ON THE

REPORT ON THE

# SANITARY ADMINISTRATION

IN

# BRITISH BURMA,

## FOR 1869.

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The report on Sanitary Administration in British Burma for the year 1869 shews considerable progress in sanitary reform throughout the Province. Some 154 additional towns and villages have been visited, and, wherever funds were available, sanitary works have been pushed on as rapidly as possible. The country has escaped any wide-spread epidemical disease, but Small pox and Cholera have been prevalent in some stations, and have added considerably to the mortality of Akyab and Mergui. It is however satisfactory to find that the Intermittent fever generally so prevalent at the close of the rains has this year been almost entirely absent. The year has been remarkable for the unusual character and partial nature of the South-West monsoon, the rain-fall being everywhere much below the average.

2. The registration of vital statistics has as yet been introduced into seventeen towns only; but from the 1st July 1870 a system of registration, based on that laid down by the Supreme Government for the whole of India, will come into force; and the Chief Commissioner trusts, that with care and attention on the part of district Officers, statistics for the whole Province will hereafter be obtained.

### AKYAB.

3. The remarks of the Sanitary Commissioner on this Station are merely a repetition of those submitted by him in his se-

parate report in June 1869. The statement that "the Health Officer and Magistrate have backed up his suggestions, but the responsible Officers have done little or nothing," is not understood.

4. The following are amongst the works sanctioned by the Local Administration on the report above noted :—

i. Raising and metalling the roads.

ii. Construction of new Masonry drains wherever required.

iii. Renewal of such Masonry drains as had been allowed to fall into disrepair.

iv. Construction of platforms for the public wells.

v. The filling up of such tanks as were obnoxious to public health.

vi. Construction of public latrines wherever required.

5. Instructions were also issued for the reduction of overcrowding, supervision of private latrines, supervision of graveyards, and the employment of a body of 200 convicts was sanctioned to carry out such Conservancy arrangements as were considered necessary. The Chief Commissioner is therefore at a loss to understand how it is that no improvement has taken place; nor is it clear how the Health Officer and Magistrate could have backed up the suggestions of the Sanitary Commissioner, and yet as the responsible Officers have done nothing.

### Ramree.

6. The sanitary condition and cleanliness of the town is very gratifying. Both Cholera and Small Pox appeared during the year but the former was chiefly confined to the Island of Cheduba. The attention of the Magistrate will be drawn to the overcrowding and general unwholesome condition of this Island. The Chief Commissioner regrets to find that the vaccine operations were entirely unsuccessful and that the people were consequently obliged to resort to inoculation. No reasons are given for these unfavourable results. The Superintendent of Vaccination will be requested to submit a report thereon. The birth rate is given as 16·6 per mille and the death rate 25·4.

### Sandoway.

7. The public health has been good, and much improvement appears to have taken place in the Conservancy arrangements.

The sanitary condition of the town is very creditable to the Deputy Commissioner, Mr. Treacy. The birth and death statistics were respectively 46·6 and 29·0 per mille.

### Rangoon.

8. Fever still continues endemic in the suburbs, but no epidemic outbreaks of any disease occurred during the year. The attention of the Magistrate will be directed to the remarks of the Sanitary Commissioner regarding the necessity for constructing more public latrines and for the prevention of overcrowding. Doctor Cowie observes that the miasma arising from the reeking swamp and rank vegetation between Poozoondoung Creek and the Rangoon river is one of the chief causes of malarious fevers met with in Rangoon, and therefore urges its speedy reclamation. The Chief Commissioner quite concurs in thinking that it would be very desirable to reclaim this swamp, but at the same time considers that the most urgent want of Rangoon is an effective system of sewerage, which should be the first object to be taken into consideration when funds become available. The Lock Hospital it is hoped will be completed before the end of the year, and will be commenced immediately that the land can be cleared and made available for the purpose. It is satisfactory to find that the increase to the Conservancy establishment has brought about a marked improvement in the general cleanliness of the town, and acknowledgments are due to Doctor Heffernan the Health Officer, and Captain Evanson the Magistrate, for their exertions in carrying out sanitary measures. The birth rate is shewn as 15·9, and the death rate as 19·7 per mille, but the census of the town is still considered to be inaccurate.

### Bassein.

9. Public health is stated to have been indifferent, and the Conservancy arrangements to have been defective, the town being described as filthy in many parts. Such a state of things is not creditable to the Officer in charge. The condition of the private latrines and the quality of the meat sold in the bazaars is also most unsatisfactory. The immediate attention of the Magistrate will be given to the remarks of the Sanitary Commissioner. The birth and death rates were respectively 40·2 and 31·8 per mille, but the population given is here also considered under the real strength.

### Myanoung.

10. Cholera appeared in a sporadic form in December, but the health of the town was on the whole very good. It is gratifying to learn that the Station has received careful sanitary attention both at the hands of Captain Plant and Mr. Godbier the Medical Officer. The birth rate is given as 36·3, and the death rate 27·3 per mille, which figures may be received as fairly correct.

### Prome.

11. The rainfall in this district during the past year was very much under the average, and in the Northern Township the crops suffered to a considerable extent. It is observed that a rapid advance has been made in filling in the Prome town swamp. To the miasma arising from this large undrained space has been ascribed the great unhealthiness of this station; it is therefore matter for congratulation that the work is now so near completion.

12. Both Cholera and Small Pox were prevalent during the year, the latter disease having been very fatal. The attention of the Magistrate is requested to Dr. Cowie's remarks regarding the introduction of a system of public latrines. The necessity for new wells and a Lock Hospital establishment should also be taken into consideration, if the Municipal fund will admit of the expenditure.

13. The population of Prome is evidently under-estimated, and the birth and death rates are consequently untrustworthy.

### Thayetmyo.

14. Many sanitary improvements have been carried out in this town, and its sanitary condition is stated to be good. The results of the enforcement of the "Contagious Disease Act" has had a marked beneficial effect on the health of the Soldiery. The provisions of the Act have been extended to a radius of 4 miles round Cantonments and the enforcement of its provisions by the Assistant Commissioner within that limit, is therefore correct. Here again a proper census is required. The birth and death rates cannot be relied on.

### Toungoo.

15. The general health of the Station is reported to have been good. A slight outbreak of Small Pox occurred, but for-

tunately did not spread. The Chief Commissioner notes with pleasure Captain Hughes' exertions in helping the people to carry out works of public utility. The birth rate is reported to have been 36·8 and the death rate 28·9 per mille.

### Maulmain.

16. This town, remarkable for the salubrity of its climate, shews as usual a death rate far below the average, being only 14·2 per thousand for the year under review. The smallness in the birth rate 14·4 per mille, is attributed to the presence of a large number of females of alien races, whose ways of life are unfavourable to increase. The birth rate among the Burmese is estimated at 23·64 per mille. This although apparently still far below the average is in reality, when the great excess of males over females in these large seaport towns is taken into consideration, a very fair birth rate.

17. The Chief Commissioner is glad to observe that some improvement has taken place in the conservancy arrangements of the town, and he trusts that continued attention will be paid to the state of the private bazaars.

### Shwe-Gyeen.

18. This was formerly one of the most unhealthy towns in British Burma, but it has gradually become the reverse. That this is principally due to judicious sanitary measures and improved conservancy cannot be doubted. It is very gratifying to find that this is now one of the cleanest towns in the whole Province, and much credit is due to Honorary Assistant Surgeon Cooper and the Deputy Commissioner for their unremitting attention to sanitary matters. Small Pox appears to have been present in the district, but did not attack the town. The death rate has decreased from 20·6 per mille in 1868, to 16·0 in 1869, while the birth rate has increased from 15·3 to 18·7.

### Tavoy.

19. The public health has on the whole been good, but Small Pox broke out in epidemic form in November and caused 108 deaths. Some improvement appears to have taken place in the general cleanliness of the town, but the attention of the Magistrate should be directed to the state of the bazaar, and to the necessity for a better water supply. Dr. Cowie's suggestion regarding some place being set apart for slaughter pur-

poses should also be carried out. The birth and death rates were respectively 23·3 and 26·8 per mille.

### Mergui.

20. This station suffered severely both from Cholera and Small Pox. It is remarkable that the former disease had been unknown in this district for 10 years previous to this outbreak, and yet Mr. Foster the Civil Surgeon is of opinion that its origin was "spontaneous." The Chief Commissioner desires that a separate report may be submitted by the Magistrate on the remarks of the Sanitary Commissioner as shewn in paragraphs Nos. 295 and 297. General Fytche has much pleasure in noticing the praiseworthy exertions of Mr. Foster during the prevalence of the epidemics. The birth and death rates for the year were 35·0 and 65·3 per mille.

### General Remarks.

21. The registration of vital statistics of the Province for 1869, shews a slight improvement on that for the preceding year, but the figures given are still far from being accurate.

22. The new system that has been introduced from the 1st July, and the proposed census of the population next year will, it is hoped, enable far more reliable results to be obtained hereafter.

23. Much however must still depend on the individual exertions of district Officers, and the Chief Commissioner trusts that they will use their best endeavours to carry out the new system of registration successfully.

24. In paragraph 85 the Sanitary Commissioner suggests that indirect control be substituted for the present disregard by district Officers of the resources placed in their hands by the custom inherent in the people of constructing, through religious motives, works of public utility. General Fytche is not aware of any instances in which Civil Officers have been backward in availing themselves of such assistance as the people are willing to give, of their own free-will, towards constructing works of public benefit; but to the wise discretion hitherto exercised in interfering as little as possible with their private wishes, must be ascribed the increasing desire on the part of the people generally to add to the number of such works; the action on their part is quite spontaneous in itself, and any pressure either direct or indirect on the part of the

Local authorities, by which the independence of such action would be interfered with, is for many reasons not desirable. District Officers will continue to encourage and assist the people in prosecuting all such works as are of general utility to the best of their ability, but the form which such works should take should be left as heretofore to the people themselves to decide.

25. The suggestions of the Sanitary Commissioner, that the rules in force for the Maulmain Slaughter House, and those drawn up for the better management of Native grave-yards in the Pegu Division, should be extended to other parts of the Province, will be taken into consideration, and if possible, acted upon.

26. Dr. Cowie recommends the extension of the "Contagious Disease Act" to all the large towns on the Irrawaddy, but the Chief Commissioner is of opinion that it is not the intention of the Legislature that the Act should be introduced except where absolutely necessary, as, for instance, in Stations where the health of the troops is likely to be seriously effected if preventive measures are not adopted. For Civil stations the Chief Commissioner does not consider that any such measure is for the present required, and under any circumstances it would be first necessary to obtain full and accurate information of the progress of the disease before any proposition for the extension of the Act could be taken into consideration.

27. In conclusion the Chief Commissioner tenders to Dr. Cowie his best thanks for the care and attention paid by him to the important works entrusted to him, as also for his full and complete report.

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# THIRD ANNUAL REPORT

OF THE

## SANITARY COMMISSIONER FOR BRITISH BURMA,

FOR

## 1869

1. It has been reserved for this report to record the rules laid down by this Administration for my guidance as Sanitary Commissioner for British Burma; and for the following reason. The duties of a Sanitary Commissioner were originally circulated for the consideration of Local Governments and Administrations with the orders of the Government of India, dated the 12th February 1868. Their scope however was considered too extensive for the powers of any one officer to perform, save in a perfunctory manner, however zealous he might be; and accordingly revised instructions were issued in Extract from the Proceedings of the Government of India, in the Home Department, (Sanitary), dated Simla, 10th September 1868—these were:

Duties of the Sanitary Commissioner for British Burma.

i.—"To ascertain the existing sanitary condition of the country under their charge, and suggest measures for its improvement;

ii.—"To advise Local Governments and Administrations in matters concerning the public health;

iii.—"To collect information as to the unusual prevalence of any particular disease or diseases in any particular locality, and to suggest measures for their removal; and to supervise measures for the prevention of venereal diseases in the neighbourhood of Military Cantonments;

iv.—"In case of any unusual visitation, to proceed to the spot, endeavour to trace its source, and aid in carrying out remedial measures;

v.—"To examine all localities in which cholera, fevers, and similar diseases are endemic or localized, and propose means for removing them;

vi.—"To assist in organizing, as well as circumstances will allow, a proper system of registration of births and deaths, unless this duty be entrusted by the Local Government to some other officer;

vii.—"To prepare a medical topography of their respective Provinces and Presidencies.

viii.—"To submit to Local Governments and Administrations a carefully digested annual report of their proceedings, and in case of the outbreak of epidemic diseases, to forward early reports of all their proceedings;

ix.—"To furnish the Imperial Sanitary Commissioner with copies of their reports, and generally to keep him informed on all matters of sanitary importance."

Rules for the Sanitary Commissioner as amended and modified by the Chief Commissioner of British Burma.

2. On this Resolution of the Government, of India, the Chief Commissioner of British Burma drew up the following instructions:—vide extract from Proceedings of Chief Commissioner in the Home Department No. 70, dated January 20th 1869.

"The duty of the Sanitary Commissioner is to ascertain, "as exactly as possible, the existing sanitary condition "of the country, and to suggest means for its improvement. "For this purpose he should spend a considerable portion "of his time, at all seasons, in travelling over the Districts "under his charge, and should always be ready to proceed "wherever local emergencies may require his presence. "He cannot hold any other appointment or employment "while holding the appointment of Sanitary Commissioner, "nor can he engage in private practice. He should advise "the Local Government on all questions affecting the public "health, and should also under such instructions as may from "time to time be given by the Local Government, advise the "Local Boards of Health, Municipalities, and other Public "bodies. He is an advising and not an executive officer, "and he cannot therefore sanction expenditure on sanitation. "He should collect information as to the unusual prevalence of "any disease or diseases in a locality investigating the causes "to which this unusual prevalence appears to be due and "should suggest measures for their removal, and also for pre-"venting their extension to other parts of the country. In "case of any unusual visitation he should proceed to the spot

" and aid in carrying out measures to arrest it, and should " endeavour to trace its source. He should minutely ex- " amine all localities in which cholera, fevers, and similar " diseases are endemic or localized, and suggest to the Local " Government the means of removing or remedying such dis- " eases. The Sanitary Commissioner should prepare from his " own personal observation, aided by the information to be " derived from records and from the observations of the Civil " Surgeons, District Officers and others, a Medical topography " of the Province.

" He should organize with the aid of Local Civil Officers " as well as local circumstances will allow, a proper system of " registration of Births and Deaths. The whole scheme " should be arranged as nearly as local circumstances will per- " mit, in accordance with the plans and proceedings of the " Registrar General in England, from whom all the forms and " instructions applicable to Great Britain can be obtained as " a basis of the Indian Returns.

" The Sanitary Commissioner has no duties connected " with the management of Gaols or Dispensaries, or with the " operations of the Vaccination Department. It is by no means " intended that the Sanitary Commissioner should not visit " and make himself acquainted with the Sanitary conditions " of such institutions, but merely that he should exercise no " official interference with them. Similarly he should notice " the prophylactic results of Vaccination.

" The Sanitary Commissioner is directly responsible to the " Chief Commissioner. He should furnish full and early in- " formation as to all his proceedings especially on the out- " break of epidemic diseases. All questions requiring imme- " diate attention should be submitted to the Chief Commis- " sioner without delay, and he should submit a short and con- " cise Annual Report.

" The Sanitary Commissioner cannot exercise any official " supervision over Military Cantonments, although he is of " course entitled to visit them and make himself acquainted " with their sanitary condition. There is no duty which more " properly falls upon the Sanitary Commissioner than that of " supervising the measures taken outside Cantonment limits, " to protect the European soldier against the dangers of ve- " nereal diseases.

"Civil Surgeons are not actually under the orders of the "Sanitary Commissioner, but they are bound to give him their "fullest co-operation and assistance.

"The duty of framing subsidiary rules has been placed "on Local Governments. In order to enable the Sanitary "Commissioner to perform his duties, he must receive every "assistance from all Local Officers. The following will be "the rules for the guidance of the Sanitary Commissioner, "and all Heads of Departments and Local Officers in this "Province.

"The Sanitary Commissioner is directly responsible to "the Chief Commissioner and to the Chief Commissioner "alone. All his reports will be submitted to the Chief Com-"missioner and all orders will be issued to him by the Chief "Commissioner. This is not intended to interfere with that "co-operation which should exist and inter-correspondence "which should take place between all Heads of Departments. "Many matters must arise which can be definitely settled with-"out any reference to the Chief Commissioner, and in those "cases in which the Sanitary Commissioner desires to recom-"mend any measure which can be carried out without the "Chief Commissioner's orders he should address the Head of "the Department concerned, and it will be his duty to bring "to the notice of the Chief Commissioner any occasion on "which his recommendations are not attended to.

"All the returns of births and deaths will be submitted "to him, and his orders as regards their registration will be "communicated by him direct to District and other officers "concerned.

"Questions of Establishments and similar executive de-"tails will remain with District officers and Commissioners of "Divisions.

"District officers and Civil Surgeons should pay imme-"diate attention to any requisitions for information which "they may receive from the Sanitary Commissioner, and these "he will make direct. All Local officers should afford him "every assistance during his inspections, and he can visit any "Government building whether Gaol, Hospital or Dispensary, "in order to ascertain its sanitary condition, but he cannot "exercise any official interference with Gaols and Hospitals. "On the appearance of any epidemic and on the unusual preva-

" lence of any disease, District Officers, Civil Surgeons and " officers in charge of Gaols should at once report the circum- " stance to the Sanitary Commissioner, as well as to the Com- " missioner of the Division or Head of the Department, and " should keep the Sanitary Commissioner fully informed of " the progress or cessation of the disease; especially is this " necessary when cholera makes its appearance in a Gaol. " Every endeavour should be made to carry out any instruc- " tions received from and to follow the advice of the Sanitary " Commissioner and the instructions contained in his Circulars " should be closely adhered to.

" In effecting Sanitary improvements, the part of Govern- " ment and its officers cannot extend far beyond enlisting the " sympathies and energies of the wealthy, and the co-oper- " ation of the more intelligent of the middle classes, and or- " ganizing and directing their efforts. But no doubt officers " of energy and ability can do much in this way, and by " themselves moving about amongst the people. The Chief " Commissioner trusts that Local officers will exert themselves " to the utmost, and use all their personal influence in the " cause. They should remember the far greater effect which " personal influence has when immediately exerted upon the " spot. Effective results may not be immediately apparent " but efforts zealously, patiently and continuously made, must " eventually produce most important impressions and add " greatly to the material well being of the people. It should " be the care of every District officer to improve the sanitary " condition of the people, as much as it is his duty to keep " down crime, or to collect the Revenue; and District officers " should remember, that in judging of their qualifications for " promotion and advancement, the efforts they have made to " improve the sanitary state of their Districts will be taken " into consideration as well as the manner in which they have " performed their Magisterial and Revenue duties. At the " same time, however, District Officers must bear in mind " that no Circular from the Sanitary Commissioner, no in- " structions they may receive should ever be so interpreted as " to lead them to suppose that they are directed to stretch " the law in order to remedy evils. Private rights must be " strictly respected and though it is the duty of the sanitary " Commissioner and of the various Health officers to bring " all sanitary defects to notice, these defects must not be re-

"medied with a high hand. The issue of Circulars and or-
"ders which though perhaps directing excellent Sanitary ar-
"rangements, would be irritating to the feelings or prejudices
"of the people must be carefully avoided. Changes and re-
"forms should not be urged on more quickly than the people
"can understand them. Any rash attempt to force on im-
"provements which are extremely distasteful to the people,
"would not only fail to accomplish the object in view, but
"might be productive of results highly inconvenient and even
"dangerous politically. The people should be led and not
"driven to make sanitary reforms."

Rules remodelled agreeably to the Sanitary Commissioner's desire, expressed in letter No. 365, dated 24th May.

3 On the submission of this Resolution to Dr. Cuningham the Sanitary Commissioner with the Government of India, he drew attention in letter No. 365, dated 24th May, to an apparent discrepancy in the wording of the orders with regard to my duties in connection with the Sanitary condition of Gaols. He recorded his opinion in these words :—"The Sanitary Commissioner has ample work
"without being made in any degree responsible for the health
"of the prisoners, and I would therefore suggest that the
"order of the Government of India on this point should be
"adhered to, and that he should exercise no official interfer-
"ence with them." This point having been satisfactorily settled, the rules were promulgated on 20th January 1869, a copy being furnished to each Commissioner of a Division and Head of a Department. They were also published in the *British Burma Gazette.*

The Rules although considerably curtailed and modified are still beyond the powers of one man to perform in their entirety. They have been followed as far as practicable.

4. Now although the labours of my post have been considerably curtailed and modified by this Resolution, it is sufficiently apparent to the most ordinary intellect that, to adhere implicitly to all the instructions which it contains, would be far beyond the powers of any one man. As far as time and unceasing energy however, have permitted, I have left no stone unturned in carrying them out, to act up to the general spirit of those instructions; and the results in the majority of instances have been more satisfactory than could have seemed possible.

Report is divided into two Heads, viz., I. Public Health. II. Vital Statistics.

5. The present report is divided as last year, under the the two heads:—

I.—Public Health and
II.—Vital Statistics.

Order of subjects followed as directed in Notification No. 155, "General," *British Burma Gazette*, page 265, dated 21st September 1867.

6. The order followed in the arrangement of subjects is also the same as in the previous year, being in accordance with the instructions conveyed in Notification No. 155, General, *British Burma Gazette*, page 265, dated 21st September 1867.

Special visits to the interior of the country made necessary by the sudden out-break of serious diseases

7. During the 12 months it has been found necessary that, I should make several special visits to stations in the interior of the Province, on account of the sudden appearance of serious diseases. These will be noticed in their order

The distance travelled during the year and the work performed.

8. The distance which I travelled in 1868, amounted in the aggregate to about 2500 miles. In the year under review the total exceeded 3600. It should be remembered that there are no railways in this country, and that in the wet weather common roads even are not to be found of any description in many of the districts. 3600 miles of travelling therefore in British Burma, really represents in their performance, a degree of exposure and bodily fatigue quite inappreciable by the uninitiated. It is quite true that part of the distance was performed in steamers, but I cannot say that I exactly see the advantages of this mode of travelling altogether, unless the Sanitary Commissioner is permitted to select his own season of the year in which to avail himself of it. For instance, I was in the Cyclone of the 9th June, off the Island of Cheduba, in the Bay of Bengal, while returning from duty in Arakan. This was anything but pleasant, or even safe travelling, although performed in a steamer. With the exception of short intervals, it may be truly said that I have spent the greater portion of my time in the interior of the country and in all weathers. Now, notwithstanding this constant moving about, the orders of Government contained in the Home Department, dated the 10th September 1868, have been adhered to as far as possible, and no delay whatever has taken place in furnishing the Local Government with full information concerning the Public Health. Moreover, early reports of my proceedings in all outbreaks of epidemic or other diseases have been regularly submitted. In addition to the active duties of my office a constant and varied correspondence has been maintained with district officers and the several

departments; and the Administration has been advised on all sanitary matters referred to me for opinion without unnecessary loss of time.

Special Sanitary Reports to be embodied in Annual Report, as directed in Chief Commissioner's Memorandum dated 1869.

9. The Chief Commissioner in the last para. of his Memorandum on my report for 1868, desires "that in future the several (special) reports of the Sanitary Commissioner may be embodied in the one submitted at the end of the year." This receives attention.

Towns possessing Municipal funds reported on in the first instance; subsequently the Sanitary requirements of villages and hamlets are brought to notice.

10. The plan which I have always adopted in my recommendations for the sanitary improvements of towns has been, to deal, in the first instance, with those possessing Municipal funds to effect needed reforms: and, subsequently to point out the requirements of villages and hamlets, noting the wants of each separately, that the Chief Commissioner may be enabled from such reliable data to form a correct idea of the probable outlay necessary to the introduction of those measures, conducive to the better preservation of the health and life of the rural classes. For many reasons this undoubtedly is the best system to follow at present.

List of towns from which Municipal taxes are collected.

11. The following list comprises the Chief towns in British Burma, from which Municipal taxes are collected.

1.—Akyab.
2.—Kyouk-Phyoo.
3.—Sandoway.
4.—Rangoon.
5.—Yandoon.
6.—Pegu.
7.—Bassein.
8.—Pantanau.
9.—Ngathyoungyoung.
10.—Lemiethna.
11.—Pandaw.
12.—Doungyee.
13.—Toungoo.
14.—Myanoung.
15.—Henzadah.
16.—Donabew.
17.—Kyangheen.
18.—Zaloon.
19.—Kanoung.
20.—Prome.
21.—Thayetmyo.
22.—Padoung.
23.—Poungday.
24.—Shwe-doung.
25.—Maulmain.
26.—Yea Myoo.
27.—Thatone.
28.—Amherst.
29.—Shwe-gyeen.
30.—Sittoung.
31.—Kykeito.
32.—Wimpadaw.
33.—Tavoy.
34.—Mergui.

12. There is no such thing as a Municipal Committee in British Burma. Act XXVI of 1850, for improvements in towns, has not been made applicable to British Burma.

Municipal Act No. XXVI of 1850, not extended to British Burma.

13. Although we have no Municipal Committees in this Province to manage our towns, we have a great many very excellent local Rules and Regulations, which have from time to time been framed with the approval of the Administration, for the prevention of local nuisances, for conservancy and to enable improvements to be made in towns. It would be a good plan to collect all these rules together and to legalize such as are approved of. The publication of a code of this nature would be of great value to District Officers in facilitating their work, and very materially simplify and assist also the Sanitary Department.

In the absence of a Municipal Act, Local Rules and Regulations have been framed. It is suggested that these should be brought together and legalized.

14. During the year some 150 additional towns, villages and hamlets have been visited, but I am not yet prepared to submit a decisive and comprehensive scheme for the sanitary improvement of rural populations generally. A very much larger extent of country than that which I have traversed must be inspected before I can be in a position to classify district communities according to their several positions, numerical strength and special conditions and requirements. Much has and is being done, of course, in the meantime, by Deputy Commissioners, Magisterial officers, Civil Surgeons and other local officers, for conservancy and all healthful purposes, which I intend to mention as I proceed, but what I now allude to are works of a permanent nature and changes likely to effect the people, which it is feared cannot be undertaken without aid from the Government in the absence of Municipal Funds.

Inspection of the interior of Districts not yet completed. No extensive scheme for sanitary improvement can at present therefore be submitted.

15. In the year just passed, a year in which although Cholera and Small Pox have not spared some situations, the country has escaped any wide spread epidemical diseases, and the people generally have enjoyed health and plenty.

The general health of the country has been good.

16. The year has been remarkable however for the unusual character and partial nature of the S. W. Monsoon. Rain fell in every month in the delta of the Irrawad-

Scanty rain fall generally. Crops, with the exception of Prome district, notwithstanding good.

dy, while in the northern portion of the Prome district the crops entirely failed for the want of it. Again in every part of the country the fall in the twelve months, although far below the average,—with the exception of the instance I have just mentioned—the crops were good and the out-turn of grain abundant. Lightning it has been said is rarely seen in British Burma save at the commencement and termination of the rainy season; and this has been accounted for by the presence of the vast forests, and other dense vegetation which clothe so extensively the face of the country. During the past year the deficiency would appear to have been made up, as the Monsoon was distinguished by a succession of showers and violent storms invariably accompanied by electric disturbances. The wind too was, all along our coast line most changeable, blowing from the N. N. W., and E. alternately, then steadily settling down for a few days in its proper quarter the S. W., when a break of fine clear weather would take place. This again would be followed by severe storms and the same variations, and so on until the end of the rains. What should have been the cold weather in the early part of the year was no cold weather at all; the temperature was more often hot and close than cool even. The rains set in at the usual time, early in May, and ceased in October, when the regular cold weather commenced, and continued most seasonable for the remaining portion of the year. The country quickly dried up, and the annual and very prevalent Intermittent fever observed at this period all over British Burma, may be said to have been almost altogether absent.

Epidemic Cholera in Akyab. The appearance of serious sickness elsewhere. The year on the whole considered a healthy one.

17. Epidemic Cholera visited Arakan in the hot season, and proved very fatal among the foreign coolie population of Akyab, which is chiefly composed of natives of Chittagong. Cholera also appeared in the Mergui District in the month of February, and continued to the end of September in a mild form. Small Pox present in Prome in 1868, broke out with increased severity in February, March and April following, attacking children principally, but died away gradually after the first rain-fall. This disease also prevailed in Mergui. Cholera again attacked Prome in the month of December, but quickly ceased—a few cases being observed in almost all the towns south of that station on the lines of our river traffic as far as Rangoon. Cholera and Small Pox have, as I before reported, either kept company

together or followed in each others wake. On the subsidence of the former disease in Akyab the latter appeared—this was also the case in Prome and Mergui. Now this may be considered a long list of epidemic visitations. Not so, with the exception of the outbreak of Cholera at Akyab and Small Pox at Prome, these diseases were mild elsewhere and did not cause any great mortality. It should be remembered that as the sanitary department is at present organized, no case as a rule, of any well known or serious disease can occur in any part of the country without the fact being reported through the Deputy Commissioners and Magisterial Officers to my office. I do not mean to say that mistakes and omissions have not taken place during the year, but generally all officers have done their best to furnish me with prompt and correct information :—Thus what would have probably escaped notice or been considered not worth the trouble of mentioning formerly is now regularly recorded. The success attending this system of reporting the appearance of serious diseases will be gathered from the body of this report. With the exception of the two epidemics at Akyab and Prome, the year has been, notwithstanding the unusually scanty rain fall a very healthy one.

SOME OF THE CHIEF SANITARY PROCEEDINGS OF THE YEAR.

Sanitary Commissioner directed to prepare a Topography of his Province or Presidency.

18. In the list of duties laid down by the Government of India in Resolution, dated Simla, 10th September 1868, para. 14, No. 7, directs the Local Sanitary Commissioner to prepare a medical topography of his Province or Presidency. The preparation of such a document as this necessitates the collection of a vast amount of information on almost every head of scientific enquiry. Especially so is this the case in British Burma, where the physical characters of the country vary so greatly in the several mountain ranges and valleys regulating its climate, and exerting an influence on its natural history as well as the habits and social development of the numerous tribes of people living in it. The physical configuration of the country and medical climate can only be studied therefore by travelling and examining each locality for oneself; by the diligent search of Government records; by obtaining replies to set questions both medical and general, from all district and medical officers throughout the Province, and by consulting the several special departments now making scientific investigations. The materials requisite to the satis-

factory completion of a map and a report such as the Government expects will take time to amass, and can only then be worked out by degrees.

In addition to the usual questions in an Annual Health report, information is being collected by degrees on various important points.

19. District and Medical officers in British Burma are generally fully employed with their respective duties. Being sufficiently aware of this fact, I was anxious in the prosecution of the great work before me, to save unnecessary trouble, and with this constantly in view, I circulated a few questions only this year, in addition to those which are usually given as headings for Annual Health Reports. Satisfactory answers have now been received by this office from the majority of gentlemen addressed. The several points to which these observations refer to as now completed embrace:—

i.—General form and aspect of the country.

ii.—Mountain ranges, rivers and valleys.

iii.—Forests, low jungle and cultivated tracts.

iv.—Swampy ground and small rivers or nullahs. The affluents and confluents of the great streams of the country.

v.—General Geology.

vi.—Deltas of rivers.

vii.—Plans of chief towns.

viii.—Water supply.

ix.—Drainage.

x.—Public Health.

Statistics being collected and inquiries into all sanitary matters perseveringly prosecuted.

20. In addition to these points, statistics are being collected. I must remark that much of the information comprised under several of the above headings has been brought together almost entirely by myself; and in addition to those enumerated many more important points are still under investigation, and although at present in an incomplete state, considerable progress is being made.

21. The subjoined is a list of some of the questions circulated during the year:—

Topographical description of the station and district generally.

Nature of climate and atmospheric phenomena. A statement and summary of the meteorology of the station for the year should also be given.

Rainfall.

Position and drainage of town.

Extent of ground occupied by town, roads, description of their position, number and width generally, showing the ventilation in regard to prevailing winds. Average superficial space approximately to each inhabitant of estimated population.

Condition of town as regards drainage.

Ventilation of houses.

Overcrowding.

Water supply. Condition of wells. Their number and positions.

Comparative state of health of the several sections of the community, *viz.*, Burmese, Talines, Chinese, Shans, and Natives of India.

Epidemics: History and progress, &c.

Mortality.

Endemics.

Employments injurious to health.

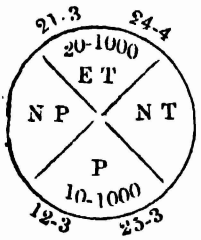
Effects of opium smoking and eating, Gunjah and Bhang.

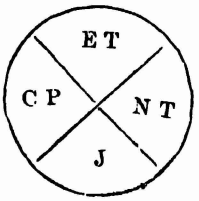
Dr. Goodeve's Cholera map. Full instructions on this subject forwarded to all officers in the Commission and to Civil Surgeons.

22. In the proceedings of the Chief Commissioner No. 26-3 of the 19th January 1869, forwarding a copy of a letter No. 28 "Sanitary," from Her Majesty's Secretary of State, dated 16th September 1868, my attention is directed to paragraph 4 of letter No. 870, dated 27th October 1868, from the Sanitary Commissioner with the Government of India, "regarding Doctor Goodeve's suggestions as to Cholera maps." These suggestions are continued in para: 9 of Dr. Goodeve's letter and are as follows:—

"Akin to the value of tables is that of maps for showing "the prevalence of disease. It might be difficult to give a "map for each disease, but the study of Cholera is so impor-"tant, and easy reference to its seats and progress so valu-"able that I would suggest that to the abstract of each Pre-"sidency should be appended an outline map, which would "tell at a glance the Cholera history of the year under re-

"port. A mark at each Cantonment or large town might be "made to indicate the dates of out-"break, duration and violence of the "epidemic among the four-classes "of persons whose condition it is ne-"cessary to take note of in Indian "Medical statistics, *viz*, Euro-"pean Troops, Native Troops, "Prisoners and Native population. "Such a figure as this might shew "the dates of outbreak and disap-"pearance of the attack, and the figures within, the rate of "mortality. In places where the "disease is endemic the fact might "be indicated by a double ring with "dates to shew the times of the great-"est severity of the disease. The "presence of Cholera in small "towns and villages might be "shown by dots, thus . would stand "for a slight outbreak, and .. or ∴ for "severe ones with dates.




23. This extract was printed and circulated together with the following remarks, to all Civil and Medical officers throughout British Burma. "To study the important "question 'How does Cholera spread', strict investigation "should be invariably made, in every outbreak, into all the "circumstances connected with the appearance of the first case.

Above extract circulated throughout the country. Accompanying directions by Sanitary Commissioner.

"In supplying the information I require, the following "directions should be very carefully attended to.

"(*a*)—A rough sketch map of the district showing the "position of all the towns and villages attacked, whether situ-"ated in hill tracks, or on or near streams, fresh or salt water, "lines of traffic, or regular inter-communications between the "urban and rural populations.

"(b)—Each outbreak and its progress to be noted in the "map as directed in above extract.

"The map when completed should be accompanied by a "short description the outbreak and progress of the epide-"mic. You will at once recognize the value of such informa-"tion to me if based upon facts, especially in regard to first

" cases—in investigating this important subject. I am confi-
" dent therefore that you will aid me to the utmost in the
" good work.

"I desire to submit to Government with my Annual
" Report for the calendar year 1869, maps shewing the course,
" &c., of all epidemics, especially cholera, for the whole coun-
" try, which have visited us in the twelve months. Your
" maps and reports therefore to be of any use to me should
" certainly reach this office not later than the 15th January
" 1870."

A few district Cholera maps already received. Sanitary Commissioner's map progressing satisfactorily.

24. In reply to this I have received as yet only a few maps. My own map therefore must necessarily be a very imperfect one. I could not look for much success this year. The work is novel to the native officials, who must be the chief reporting agents from the interior. However, the progress made in this important direction during the year is very gratifying, and although my own map is far from perfect, it certainly indicates from the pains taken to supply my office with what little information it does exhibit, that we may expect great improvements in the future.

Rules for the proper conduct of Slaughter houses in all towns in British Burma.

25. For the improved sanitation and profitable management of the Slaughter houses in the municipal towns in the country, I proposed to the Chief Commissioner that the rules which had for sometime been in force in Maulmain should be made generally applicable. These rules are :—

" A building to be erected and paid for out of the Muni-
" cipal Funds, the site to be fixed upon by the Magistrate and
" Health Officer, subject to the approval of the Commissioner.

" No animals killed for sale to be slaughtered in any
" place other than the Slaughter house.

" A fee to be paid for each animal slaughtered as fol-
" lows :—

| | |
|---|---|
| " Bullock and buffaloes. ... ... ... | 1 Rupee. |
| " Calves and pigs. ... ... ... ... | 8 Annas. |
| " Sheep and goats. ... ... ... ... | 4 Annas. |
| " Kids. ... ... ... ... ... ... | 2 Annas. |

" Animals also to be killed only between the hours of
" 3 and 7 P. M.

"The Conservancy Officer to be in attendance and to in-
"spect all animals previous to their being slaughtered.

"When an animal is passed by the Conservancy Officer
"it will be at once slaughtered.

"A register will be kept shewing the name of the per-
"son bringing the animal and a description of the animal
"brought.

"A ticket to be given to the person bringing the animal
"when it has been passed, containing a description corres-
"ponding with the entry in the register. This ticket must
"be produced by the person selling the meat in the bazaar.

"No meat except game to be sold in the bazaar, which
"has not been inspected, and for which a ticket has not been
"received.

"When an animal is rejected entry will be made in the
"register giving reasons for rejection.

"The fee for slaughtering to be paid when the animal
"brought for slaughter has been passed, and previous to its
"being slaughtered.

"The Conservancy Officer to receive the following fees
"out of the amount paid :—

"1 Anna for each bullock or buffaloe.

"½ Anna for each calf or pig.

"¼ Anna for each sheep, goat or kid.

"Two peons also to be entertained and paid for out of
"the fees for slaughtering. It will be their duty to keep the
"house thoroughly clean and to assist the Conservancy Of-
"ficer.

"Any breach of these rules to be punishable under fine
"not exceeding 100 Rupees."

26. The plan of Slaughter house in Maulmain is exceedingly simple and if properly looked after can easily be kept sweet and clean. It consists of a suitably constructed shed with lattice work sides. The floor is covered with zinc and slopes to a common outlet. This outlet again empties itself into a well, into which fixes a close fitting metal lined box for the reception of the blood and washings. The box is raised when nearly full by means of two good iron handles and the contents are thrown into a tidal stream close by.

27. The plan adopted at Thayetmyo is on the same principle only the floor is bitumened: again, this Slaughter house possesses a good well in its compound and the whole place is nicely drained and fenced in. Here the offal and washings are buried. I highly approve of the Thayetmyo shambles and I have recommended similar buildings for all our large towns.

The Thayetmyo Slaughter house recommended as the best plan to follow.

28. I now desire to show how profitable these institutions are. For the sanitary improvements of towns and to meet current expenses in repairs and conservancy it is absolutely necessary to lay our hands on all possible sources of municipal income, and no more remunerative works can be constructed with this view than Slaughter houses and bazaars.

Slaughter houses and bazaars pay well wherever constructed.

29. The Slaughter House in Maulmain was erected in 1868 and cost about 1,700 Rupees. The income actually received in 1868-69 was Rs. 4,709 or 277 per cent on the outlay. The original cost of this building therefore was not only covered in one year, but a large profit was left for municipal purposes after deducting all expenses.

Original cost of Maulmain Slaughter house 1700 Rupees. Receipts in 1868-69, Rupees 4,709 or 277 per cent on outlay.

30. In Rangoon the Slaughter house is farmed out. The receipts amounted to 6,400 Rupees in 1868-69. The whole of this sum is clear profit to the municipality and must increase yearly. There is no proper Slaughter house here. A mere shed answers the purpose. A beginning however has at last been made; the outlay necessary to the erection of a suitable building having been sanctioned.

There is no proper Slaughter house in Rangoon, one however is to be erected immediately. The butchers license sold for 6,400 Rupees in 1868-69.

31. The foregoing Maulmain Slaughter house rules which have been in force in that town since the 15th February 1868, I was desirous of having extended to all towns in which such institutions existed. The Slaughter house at Thayetmyo had been completed for some months when I addressed the Chief Commissioner with this view—in letter No. 4, dated, camp Thayetmyo, 4th March 1869. The following is the reply I received in his Assistant Secretary's letter No. 192-2, Home Department, dated Rangoon 12th March 1869, para 3. "The Chief Commissioner has no legal

Sanitary Commissioner desires to extend Maulmain Slaughter house rules. Chief Commissioner replies that "he had no legal power" to enforce the rules.

power to frame rules for Slaughter houses, nor indeed has the Government of India. A Municipal Act for British Burma will shortly be laid before the Legislative Council, which will, if passed, enable the Chief Commissioner to frame rules." Notwithstanding this the Slaughter house has been opened.

Rules for the better arrangement of Native Graveyards were drawn up and circulated by Colonel Ardagh, Commissioner of Pegu, during the year.

32. In my Annual Report for 1868, page 13 para. 35, I said with reference to the Native grave yards throughout British Burma, "I consider that rules are very necessary for their better management." Again I remarked, "after visiting and inspecting numerous stations for burning "and interment in this country, I am satisfied that as a rule "they are not supervised by a responsible officer as they "should be, and are frequently entirely neglected. For the "improved health of towns and rural communities strict rules "must be framed and enforced in all grave yards." I also said in another report submitted to this Administration that the subject was receiving my earnest attention. During the year in consultation with Colonel Ardagh, the Commissioner of Pegu, he drew up and circulated for the guidance of all concerned a set of rules admirably adapted to the purpose. I was most anxious to ascertain for myself the working of these orders before again approaching the subject officially. The rules were issued in the month of September and their working has been so satisfactory, that I now desire that in the Divisions of Arakan and Tenasserim, similar regulations may be brought into force. In Maulmain for sometime regulations in regard to the speedy burial of the dead have existed, but I would wish them superseded by those I now bring to notice which are more comprehensive and more suitable. They are as follows:—

SANITARY RULES REGARDING THE BURIAL OF THE DEAD.

"The several Deputy Commissioners and Magistrates "are requested to use their local influence towards obtaining "an observance of the following rules in the disposing of the "dead. (The rules are meant for the Natives of the country "and other Asiatics). To apply for an Act would be merely "to postpone what it is desirable should be introduced at once.

"If however it is found that the rules will not be followed except the non-observance of them is visited by punishment; report should be made when the Head of the Local "Government will be addressed.

RULES.

" The Conservancy Officers in towns where there may be " such and the several Goungs and Kaydangyees in the in- " terior of the district will see that the following rules regard- " ing the burial of the dead are observed, and will urge it on " the people to comply with them, where there may be any " slackness on their part to do so.

i.—" Except in special cases no dead body should be kept " beyond 24 hours, before it is buried or burnt. (This does " not apply to Phoongyees.)

ii.—"When from any cause it is desired to exceed this time " report should be made by the occupants of the house to the " Kaydangyee or Goung, or whoever may be the senior re- " sident Government servant, who may extend the time, but " in no case beyond 48 hours from the time of death.

iii.—" Where the deceased has died of Small Pox or any " other contagious or infectious disease, the time should not " exceed 12 hours at most.

iv.—" Where the death has resulted from Cholera the bu- " rial should take place as soon as practicable after report and " in no case extend beyond 6 hours.

v.—" Provided that in all cases the dead shall not be inter- " red in the night time or without report to the proper Town " or Village officer, or in his absence to whoever may be see- " ing after his duties.

vi.—" The 'Tsandalas' are to be required to dig the graves " for the sepulture of the dead 6 feet (or 4 cubits) deep and " they are not to dig any grave at a closer distance than three " feet (or two cubits) from any other grave.

vii.—" The 'Tsandalas' should see that the grave yards are " kept clean and in good order and it is recommended that " they should not dig graves in a promiscuous manner but in " regular lines.

viii.—" And it is also very desirable that each Thingyein " သင်းချိုင်း or grave yard should be surrounded either with a " paling, or with a hedge of thorns placed round it like a " *chevaux de frise* so as to keep dogs and wild animals out.

ix.—" The Conservancy Officer in the town and the senior " resident Government officer at other places should at least " once a month visit the grave yards and see that these rules " are acted up to and that everything is clean and neat.

"It is confidently expected that the people and grave-
"diggers will co-operate cheerfully in carrying out these de-
"sirable arrangements without having recourse to legislative
"action. But the several Magistrates will understand that a
"neglect of them carries with such no penalty as yet, except
"in the case of Government officials, who if they do not do
"what they should do in carrying out the suggestions of the
"Sanitary Commissioner of course will be noted as deficient."

Paddy husk. Sanitary Commissioner's recommendation for its disposal not attended to.

33. In my Annual Report for 1868, page 19, para. 43, I drew attention to the injurious practice of depositing paddy husk from the rice mills and winnowing machines on to the banks of our creeks and rivers at the sea-port towns of Rangoon, Maulmain, Bassein and Akyab. It occurred to me that, as a temporary measure, "if suitable machinery to separate the broken rice from the husk were set up, and small jetties run out into the creeks from which the latter might be cast well into the streams much of the mischief complained of would be obviated. Paddy husk being light, the greater part of course would thus float well out of harms way." I still hold to this opinion. I made the suggestion because I considered it the readiest, most reasonable and cheapest plan of, as I have said, temporarily, disposing of a great difficulty. We must remember that the rice trade, like all grain trades is a very fluctuating and precarious one and that it will not bear heavy taxation. It is therefore necessary in dealing with an evil of this magnitude to be careful that no sudden or impossible restrictive order is passed, however good and needful it may seem in a sanitary point of view. To insist without giving timely notice that, all paddy husk &c., must be carried away to a distance and there burnt, either by means of tramways, carts or hand labour, would be tantamount to imposing a prohibitive duty on the grain trade of the country. To merchants the rice business would no longer prove a profitable one, and thus our staple commodity would cease to be an article of export. I think that in the mean time, and until some more practicable scheme has been discovered, what I have proposed will be sufficient to meet the difficulty as far as the Public Health is concerned. Nature knows no waste, and however absurd it may seem for any sensible person to entertain such an idea, I have, no hesitation in saying that, I firmly believe, at no very distant date paddy husk will be employed for some useful and profitable

purpose. Were a good prize offered as a stimulus to inventors this highly desirable result might perhaps be reached all the more quickly.

Sanitary Commissioner's with the Government of India, letter No. 112 dated 28th February 1869, and series of Registration forms, submitted for consideration.

34. A copy of the Sanitary Commissioner's with the Government of India, letter No. 112, dated Calcutta 28th February 1869, and his "series of forms for collecting vital statistics of the general population" were submitted to me together with letter No. 464-4, Home Department, dated 22nd July. My careful consideration of the new forms was requested in the following words :—"There are many parts of this province in which it appears to the Chief Commissioner difficult, if not impossible to obtain the registration of the information required except by appointing special Registrars at considerable cost."

"In short, as a commencement it would appear advisable to collect the required information only in those towns where the Registration of these statistics has been already partially introduced. On this point the Chief Commissioner requests an expression of your opinion. The machinery by which the necessary information will have to be collected, tabulated, and compiled in a useful form also requires serious consideration, as the Chief Commissioner could not sanction any large sum for this service. Again it is admitted that unless these returns are rendered with a considerable degree of accuracy they will be of little or no value. If these returns are to be given for each 'Rural Circle' as the headings of some of the Forms shew, it will be necessary to take the 'Township' as the unit for which the returns are to be compiled and in that case the ministerial agency available will be limited to Thoogyees, Yua-goungs and so forth, a class of officials from whom it would be hopeless to obtain information in a complicated form. One thing it is necessary to observe at starting, and that is the Police are to have nothing whatever to do with the collecting of the information or otherwise, nor are any penalties to be inflicted. All must be done by good management on the voluntary principle, and all the statements and returns must be prepared for submission to your office only in the Vernacular. All the necessary instructions will therefore have to be drawn up in the Vernacular. Whatever unit of area may be fixed on, the returns of each unit space will be sent to your office for compilation. The returns therefore will be very numerous."

Sanitary Commissioner requests that the new Registration forms may be introduced into British Burma at once.

35. I lost no time in replying to this request. The new system seemed to me to be so easy of application, the forms so simple and the whole suggestions of the Sanitary Commissioner so remarkably well suited to this country, where every Burman can read and write, that I had no hesitation in desiring the introduction of the new forms at once. I wrote in letter No. 69, dated 27th July as follows :—

"The forms of Registration recommended by the Sanitary Commissioner with the Government of India, are a vast improvement on those now in use in this country, and being remarkably simple are infinitely more practicable * * *.

"The introduction therefore of the new system of registration returns into our large towns can be a matter of no difficulty

"It is proposed to extend the new system of registration to all towns numbering 5000 inhabitants and upwards. This is most desirable and I hope sanction will be given to carry it out. Then again as regards the returns themselves there is no difficulty. The question is simply one of expense, and of course a Registrar an intelligent native will have to be appointed to each town on a fixed salary.

"The unit of area, suggested in your letter, viz: the 'Township' is, in my opinion the best division, and the one I should have recommended myself * * *.

"The collection of accurate vital statistics from rural circles throughout the country, in a sanitary point of view, is of such immense importance, that I hope the Chief Commissioner will not stay the progress so desirable in this respect, from fear of the necessary expenditure to obtain it * * *.

"You remark in your letter that "all the statements must be prepared for submission to your office only in the vernacular. All the necessary instructions will therefore have to be drawn up in the Vernacular, &c., &c." At present this information is collected in the Vernacular and the particulars are tabulated in English Forms in the Magisterial offices.

"The Sanitary Commissioner has recommended in para. 19, of his letter that the 'returns of the different towns and rural circles should be received first by the Civil Surgeons of the district and by him forwarded to the central office' (Lo-

cal Sanitary Commissioner's.) This is a practice which has always been followed in British Burma, and I can see no good reason for the change you have proposed * * *. In conclusion I said, 'From para. 13 forwards of the Sanitary Commissioner's letter instructions are given for the preparation, and the use to be made of the new forms; and if his suggestions are adhered to, I shall be able to perform my part of the duty without difficulty with my one clerk, provided other and additional paper work is not heaped upon me."

No orders as yet passed introducing New Registration forms. The opinions of the several Commissioners of Divisions on proposed extension of Registration.

36. I was in hopes that orders would have been passed sanctioning the introduction of the new system in time to enable me to have the forms printed and the whole scheme in working order by the 1st January 1870, but I have heard nothing further on the subject. In the mean time I took the opportunity of ascertaining the opinions of our several Divisional Commissioners on the expediency of extending our present system to all towns numbering 5000 souls and upwards. I also solicited information as to what the probable expense, if any, would be incurred thereby. Our registers embrace nearly every point requisite for the filling in of the Sanitary Commissioner's with the Government of India tables. I should only therefore have had to change the forms had the series he suggested been adopted in the *interim.* I received the following in reply to my enquiries. Colonel Stevenson the Commissioner of Arakan, consulted with the Deputy Commissioners of Akyab and Ramree. The former Mr. Ireland states "that he does not think that registration in the interior of the District is called for, and considers that it would not be attended with results of any value." The latter Mr. Macrae, on the other hand reports "that the system has already been extended in his district and that there is a regular registration of Births and Deaths in the towns of Kyouk-Phyoo, Ramree, Aeng, and Cheduba, and that there are no other towns in the District containing 5000 inhabitants." Mr. Macrae is of opinion that the system might be extended, and that Thoogyees might without difficulty be enabled to send in a monthly return of the births and deaths within their Circles, but that the information regarding the special causes of deaths could not be expected to be very reliable." Colonel Stevenson than adds his own opinion which is "that we cannot extend the system with any fair prospects of successful results without some

machinery besides our Teik Thoogyees. I do not advocate the extension under present circumstances."

Colonel Ardagh, the Commissioner of Pegu, admits the valuable nature of vital statistics and raises no objections to the extension of registration. He only doubts the possibility of obtaining funds to pay Registrars with. He recommends the extension of the registration of Births and Deaths to the following places as those which, from the presence of Assistant or Extra Assistant Commissioners of a high grade, will probably be found to be the best selections."

| | Population | |
|---|---|---|
| **Rangoon District.** | | |
| Yandoon | 6,686 | Head Quarters of Assistant Commissioner. |
| Pegu | 3,317 | Extra Assistant Commissioner 1st Class. |
| **Bassein District.** | | |
| Pantanau | 4,899 | Extra Assistant Commissioner 1st Class. |
| Nga-thin-ghyoung | 3,631 | Assistant Commissioner. |
| **Myanoung District.** | | |
| Donabyo | 3,136 | Extra Assistant Commissioner 1st Class. |
| Kyanghete | 7,675 | Under supervision of Assistant Commissioner Myanoung. |
| **Prome District.** | | |
| Poungday | 5,549 | Assistant Commissioner |

Colonel Ryan the officiating Commissioner of Tenasserim writes, "I may state that no Registration can be really effective, unless it is by compulsion of the people."

The towns where the Registration of Births and Deaths in the Pegu division is at present carried on are here given with the monthly expense shewn opposite to each :—

| | | |
|---|---|---|
| Rangoon | Rs. | 50 |
| Bassein | ,, | 25 |
| Myanoung | ,, | 10 |
| Henzadah | ,, | 10 |
| Zaloon | ,, | 5 |
| Kyangyeon | ,, | 10 |
| Prome | ,, | 25 |
| Shwè-doung | ,, | 16 |
| Thayetmyo. | ,, | 15 |
| Toungoo | ,, | 16-10-8 |
| | Total | 182-10-8 |

These figures give a fair approximate idea of the cost of registration in the several towns of the other two divisions in this Province. Were the system recommended by the Sanitary Commissioner with the Government of India therefore extended to the whole country, rural as well as urban populations, I do not think that the attendant expense would be of very great consequence.

Sanitary Commissioner completely approves of new scheme of Registration. He anticipates no difficulty whatever in the introduction of the system and considers compulsory measures quite unnecessary.

37. The importance of collecting the vital statistics of a country has been fully discussed and admitted ages ago. I most certainly shall not dilate upon that question here. It is self-evident from what I have said, that I most completely approve of the Sanitary Commissioner's scheme for General Registration. I will go further and say that, I do not anticipate any difficulty or opposition from the people in extending that system throughout British Burma. It can be in my opinion far more quickly and satisfactorily introduced into the interior of the Province than it has been into our seaport and other large towns. As regards the people themselves we have never experienced any trouble whatever in the registration of Births and Deaths. Our great bug-bear has been the want of a proper system of collecting data, and the efficient surpervision of Registrars. The Chief Commissioner says that Registration must be carried out when sanctioned by the Government on

the "voluntary principle," but from the opinions expressed by two of the Commissioners of Divisions we must not expect any great things in this direction. I would not recommend myself, any compulsory measures being adopted with the people, they are I think quite unnecessary as yet. I would however insist upon all District and Magisterial officers making it a first duty, *Nolens volens*, to attend to the Registration of vital statistics, and responsible for the correctness of the figures of the Registrars under them. I do not record this opinion hastily or without ample reasons. I judge from the returns placed before me, from year to year, and with the exception of one or two gentlemen, exceptions which prove the rule, it is plain enough that supervision is not properly exercised. I am most desirous of introducing the Sanitary Commissioner's with the Government of India, scheme and series of forms of Registration for all rural and urban populations throughout the country, without delay; and I now await the orders of Government to set the machinery in motion.

Sanction given to keep in store McDougall's disinfecting powder in all large towns throughout the Province.

38. Considering it very important that some proper and cheap disinfectant which would not materially deteriorate by keeping, should be always available in all our large towns in the Province, I addressed the Chief Commissioner with a view to his sanctioning local officers indenting for supplies of McDougall's powder. This was granted. The correspondence and orders passed on this subject will be founded in the appendix to this report.

Drs. Cuningham and Lewis's Memorandum regarding Professor Pettenkofer's theory of the mode in which Cholera is propagated &c. circulated. The towns in which the apparatus should be erected also noted.

39. Copies of Dr. Cuningham's letters, the Sanitary Commissioner with the Government of India, Nos. 521 and 529, dated Simla, the 26th and 29th June respectively, form of Register, diagram of Apparatus and Memorandum by Drs. Cuningham and Lewis, "regarding Professor Pettenkofer's theory of the mode in which Cholera is propagated and the means to be employed for testing it," were forwarded to me together with letter No. 581-2, "Home Department," dated 12th August 1869, from the Chief Commissioner to my address. I was requested to report the best means in my opinion of conducting the experiments suggested. I immediately replied by letter No. 87, dated 16th August. I said that copies of all the above papers should be at once circulated to all District and Civil Medical officers. I recommended that the necessary apparatus for re-

cording the data should be forwarded without delay to the following stations :—

| | | | |
|---|---|---|---|
| THAYETMYO ..... | No. 1. | RANGOON..... | No. 4. |
| PROME ..... | „ 2. | MAULMAIN ..... | „ 2. |
| MYANOUNG ..... | „ 1. | TOUNGOO..... | „ 1. |
| NYOUNG-DOON .. | „ 1. | SITTOUNG..... | „ 1. |
| MENGAY ..... | „ 1. | TAVOY..... | „ 1. |
| BASSEIN ..... | „ 2. | MERGUI..... | „ 1. |

I pointed out that as the instrument was a very simple one, it might be constructed without difficulty at all the larger stations. I suggested that the management of the instruments should be placed under the Civil Surgeons and Medical Officers in charge of stations and that "where there are no such officers, the Assistant and Extra Assistant Commissioners," should be directed to look after them and record the daily readings. I pointed out the importance of at once supplying the instruments to the stations I have mentioned, as "Cholera generally appears in one or other of them on the breaking up of the S. W. Monsoon," and in conclusion I said "in all the towns I have mentioned there are wells suitably situated, it will not therefore I think be necessary to waste time in constructing others specially for the purpose." Orders were issued, but what has been the result of the experiments I am unable to say, as no returns have as yet reached me, although they were to have been sent in by the 31st December 1869.

40. In May last, I asked the late Dr. Maingay, Superintendent of Rangoon Gaol, to favour me with the names of as many trees which he could remember most suitable for planting in towns in this Province. I forwarded to him a list of those which I considered adapted to the purpose in these words, "you will see that my selection embodies three distinct properties. First, they are evergreen; secondly, they are valuable for their fruit or flowers, and thirdly, they all give dense shade in the hot weather." In reply he very kindly sent me the following Memorandum, dated 1st June, which I requested might be published in the *British Burma Gazette*. This was done but Local Officers did not take the hint. The list was expressly published for their edification and guidance. I now therefore give the document additional prominence with the hope that in plant-

* The late Dr. Maingay's list of fruit, flowering and evergreen trees adapted for planting in towns near the coast.

ing trees in our towns responsible officers will consult the same in selecting those most suitable to each locality.

MEMORANDUM BY ALEXANDER C. MAINGAY, M. D., ASSISTANT SURGEON, BENGAL ESTABLISHMENT, &c., &c.

*Dated Rangoon 1st June* 1869.

" The natural order *Guttiferæ* or Gamboge family stands in " the foremost rank as regards the beauty, foliage and durability " of its timber trees. One of the most ornamental species of the " order is already abundant near Rangoon, namely the *Messua* " *ferrea* (Linn.) Wight Icones tab. 118! named in the vernacu- " lar 'Gangau.' It is a question to be determined hereafter " whether the *Mesua Coroma ndelina* of Wight Icones tab. 117! " and illustrations p. 127, is not a mere variety of the preced- " ing, as specimens of a form almost identical with a figure in " the Icones are also met with near Rangoon, but obviously " mere varieties of *ferrea.*

" Handsome as this tree undoubtedly is, it must give way " to *Calophyllum Inophyllum* (Linn.) Hooker Bot. Mis. tab. " XVII vol. II which is to be recommended in preference to " all others for planting along public roads, and for which it is " largely used at Singapore ; I have not seen it near Rangoon, " but have seen its flowers, or those of an allied species, (Tha- " rabi of the Burmese) worn by the natives in their hair, con- " sequently the genus is met with in this district.

" This tree ought to alternate with *Eugenia Thumra* (Roxb.) " Wight Icones tab. 617 ! which is common in the Canton- " ment, and which gives copious shade when most required " in the dry season.

" *Mimusops Elengi* (Willd.) the Kya pan of Burmans, is an " ornamental tree much valued by the natives for its small " sweet scented star like flowers, and it affords good shade " at all seasons. So likewise does *Pithe colobium lobatum* " (Benth.) the curious twisted pods of which contain edible " seeds. It is the Jireng of the Malays, and was originally " admirably described by Dr. William Jack, the friend and " physician of Sir Stamford Raffles, in the Malayan Miscella- " nies, and his descriptions of it and other Malayan plants " were afterwards reprinted in the Botanical Miscellany, " and in the Calcutta Journal of Natural History. I have " carefully compared Malayan specimens in my Herbarium, " No. 1167, with Burmese ones and I can detect no difference,

" except that perhaps the leaves in the latter are a little longer " and narrower. I have noted the foregoing entirely on ac- " count of the shade they afford, and I will now indicate a few " other remarkable either for the beauty and fragrance of " their flowers, or for their special utility for which reasons " they might be sparingly interspersed with the preceding.

" *Fagræa fragans* (Roxb.), a tree loaded at certain seasons " with delightfully fragrant clusters of pale cream coloured " flowers. It is of very slow growth, so slow indeed as to have " passed into a proverb with Burmans. Its wood is most " valuable, and its bark is a valuable tonic and useful febrifuge.

" *Guaoteria longifolia,* much planted along road sides in " India, and *Cananga ordorata*, another member of the same " natural order, not unfrequent near Rangoon, and a favourite " in the Straits for the same purpose as the former.

" *Pterocarpus Indicus* (Willd.) the well known Padouk, " very beautiful when in flower, but not to be recommended on " account of the strong unhealthy odour of its blossoms, and its " bare appearance in the dry weather. *Lagerstrœmia to-* " *mentosa* (Prs.) Walper's Annales volume I, p. 295, a rare " tree peculiar to Burma, where however common, forming " when in flower, together with *Sterculia Colorata* (Willd.) one " of the greatest ornaments of the Cantonments in the months " of March and April ; the contrast between the delicate white " flowers of the one, and the splendid scarlet of the other, be- " ing very pleasing.

" *Lagerœtrœmia Reginæ* (Peemah in Burmese,) well de- " serving its name, and lovely towards the latter end of April ; " with lilac thyrsi of flowers, but unfortunately entirely desti- " tute of foliage in the dry season when shade is the most re- " quired.

" *Cassia fistula* (Willd.) and another as yet undetermined " species of the genus, at once recognized by their resemblance " to the *laburnus* of English shrubberies."

" Lastly a species of chestnut, and another judging from " its leaves only, as I have not yet seen the flowers, of either " *Xanthophyllum;* or perhaps *Embryopteris.* Both of them " are under observation, but I am at present unable to give " an opinion regarding them as they may possibly shed their " leaves in the dry season, otherwise they will be very valua- " ble for shade, as their foliage in May is very dense. The

" existence of the chestnut indicates a comparatively cold cli-
" mate, as in India the Genus *Castanea* is found on the hills
" only, and more especially in the humid forests of the *Khasya*
" —*Castanea Martabanicea* is peculiar to Burma."

" The Mahogany has been recently introduced into India
" for road side planting, but I have never seen it growing, my
" knowledge of it being derived from my Herbarium speci-
" mens only. In concluding my list I must not omit to men-
" tion another tree which I have not as yet noticed in this
" neighbourhood, but which is frequent in many parts of Bur-
" ma. It is the *Pongamia atropurpurea* of Wallich, figured by
" him in the Plantæ Asiaticæ Rariores tab. 78 ! It affords a
" good shade and has fine pyramids of dark purple flowers. Its
" wood is exceedingly valuable, resisting the attacks of white
" ants to a remarkable degree. It, or a species so closely al-
" lied as to cause Professor Miquel in his Flora Van : Neder-
" landsch Indie Suppl., to hesitate in indicating the specific
" differences, is the Rassak of the Malays. I will finally con-
" clude with the suggestion that a few palms ought to be in-
" termixed, and for this purpose, there is one pre-eminently
" adapted, affording foliage and shade in abundance ; in fact it
" is the most stately member of the order with which I am
" acquainted. It is known botanically as the *Arenya Saccha-*
" *rifera* (Labill.) and its native names are according to Balfour
" the following :—

"GOMUTI,
"AREN,
"ANAA,
"KABONG.

" Its home is in the Eastern Islands, but it thrives well in
" the Botanic garden at Calcutta. Its leaves sheath the stem
" at their bases and form excellent supports for ferns and
" other Epiphytes so that the stems are often surrounded with
" a tracery of the most delicate green adding greatly to the
" inherent beauty of the tree itself.

" The foregoing notes apply generally to those towns only
" of Burma which are situated near the coast, as it is very
" doubtful if *Callophyllum* for example would grow in the more
" dry interior, or any great distance from the sea ; as the ge-
" nus is peculiarly a maritime one, attaining its maximum in
" the humid forests of Ceylon, Malayana, and Sumatra.

"In concluding the subject, I take the opportunity by it "of drawing attention to the suitability of the common pal-"myra palm, if planted for the purpose, of affording support "to the Telegraph wires. It is a very hardy tree, thriving "equally well in the dry climate of Upper India and in the "damp one of Singapore.

"The trees would doubtless take many years in attain-"ing the necessary size, but this once reached, they would "last for generations.

"ADDENDA:—Figs, and fruit trees generally have been "omitted, as the former are not only quite bare of foliage in "the dry weather, but their seeds vegetating readily upon roofs "and buildings, are most destructive to them. The latter do "not afford any trees of such value for shade with the ex-"ception of the Mangoe, of which is not very durable; and "the Ma-Yan, a species of Bouea. It has not been my object "to do further than indicate the more common trees, of which "seedlings can be readily obtained and successively cultiv-"ated, than rarer species, which very generally require deep "shade when first planted.

"The Burmese names are in part quoted from Balfour on "the timber trees of India, and the author does not hold him-"self responsible for their correctness."

Doctor Maingay's list was drawn up for Maulmain and Rangoon. An additional list of suitable trees for road side planting throughout the country kindly submitted by J. J. Coles Hardinge Esqr., Secretary to Agri-Horticultural Society of British Burma.

41. Doctor Maingay suggested these trees for "planting along the sides of public roads in Rangoon and Maulmain" only. I now subjoin an additional list, kindly drawn up for me by Mr. J. J. Coles Hardinge, Secretary to the Agri-Horticultural Society of British Burma, of shady trees for road side planting in towns and villages throughout the country. Those marked "G" can be seen in the Society's garden.

*Dillenia Speciosa*—သရေး—Tha-byee-(G.)

*Guatteria Longifolia.*—General name for species—တနတ်စားး—Ta-nat-sa-(G.)

*Thespesia Populnea*-(G.)

*Sterculia Fœtida*—လက်ခုတ်း—Let-khok.

*Visenia Velutina*—(Voight)

*Calophyllum Inophyllum*—ပုန်းညက်ပ—Phung-nyat-(G.)

*Calophyllum* (?)—သရပီး—Tha-ra-bee.
*Sethia Indica.*
*Sapindus Emarginatus*—ဆိုက်ချေ၊—Nseik-khyœa-(G.)
*Azadirachta Indica*—သင်းတောကမခါ၊—Them-bau-ka-ma-kha-(G.)
*Melia Azedarach*—ကမာခါး။—Ka-ma-kha-(G.)
*Averrhoa Carambola*—ဇောင်ယား။—Zoung-ya.
*Do. Bilimbi* (?)
*Ochna Squarrosa* (Linn.)—စင်ဝယ်။—Nsen-way.
*Anacardium Occidentale*—သည်ဟိုသရက်တည်း။—Thee-ho-tha-yet-(G.)
*Mangifera Indica*—တောစာသရက်။—Tau-sa-tha-yet-(G.)
*Pongamia Glabra*—သဝန်၊—Tha-wen-(G.)
*Dalbergia Sissoo*—ဒေါက်လောင်း၊—Louk-Loung-(G.)
*Pterocarpus Marsupium* } ပတောက်၊—Pa-douk. Anda-
*Do. Dalbergioides* } mans (general name.)
*Jonesia Asoca*—အသောကဖို၊—A-thau-ka-pho-(G.)
*Cathar-to-carpus Roxburghii*—ရကြီ။—General name.
*Syzygium Jambolanum*—သပြေချင်း—General name of family-(G.)
*Barringtonia Speciosa*—ကြည်း၊—Kyee-(G.)
*Careya Aborea*—ဘန်ဘွေ။—Ban-bwœ-(G.)
*Nauclea Cadamba*—မအူ။—Ma-oo-(G.)
*Mimusops Elengi*—ခရေ၊—Kha-ya-(G.)
*Bassia Longfolia*—ကမ်ဇော်၊—Kan-zau-(G.)
*Jambosa Vulgaris*—သပြေသပြေ—General family name.

Mr. Hardinge specially recommends the following as adapted to towns :—

1.—*Guatteria Longifolia*... ... (Burma.)
2.—*Calophyllum Inophyllum*... ... (do.)
3.—*Sapindus Emarginatus*... ... (do.)
4.—*Azadirachta Indica* ... ... ... (do.)
5.—*Mangifera Indica* ... ... ... (do.)
6.—*Pongamia Glabra*... ... ... (do.)
7.—*Jonesia Asoca* ... ... ... (do.)
8.—*Jambosa Vulgaris* ... ... ... (do.)
9.—*Nauclea Cadamba*... ... ... (do.)

42. Mr. Hardinge says that all these trees are "either handsome and fragrant flowering or fruit trees. The "*Jonesia*" for instance, Roxburgh says he thinks much handsomer than even the "*Amherstia nobilis.*" It has magnificent foliage interspersed with "*Mimusops*" and "*Mangifera*" there could not be a finer avenue. The *Calophyllum inophyllum* could be grown here to perfection but seeds must be obtained from India."

All the trees mentioned in Mr. Hardinge's Memorandum are either handsome and fragrant flowering or fruit trees.

It is strange that no one has suggested the planting of the "*Amherstia nobilis*" in our towns. The tree grows well near the coast and in the Sittoung valley. I observed some beautiful specimens in the town of Shwè-gyeen. As for beauty and density of foliage no better tree could be found.

43. In my special report on the Town and Station of Toungoo (vide Annual Report for 1868, page 106,) I pointed out the use of trees in towns. I said that "trees are not only ornamental in towns but great barriers to malaria." I further drew attention to the principles which should guide us in our selection, and I desired "that all officers in charge of districts may be requested to make it a duty to encourage the planting of ever-green, flowering, and fruit trees at the side of all the streets and roads in towns and villages, where such have been constructed wide enough to admit of the same." I cannot too strongly reiterate this request, and now that I have furnished an extensive list of suitable trees I trust that "the indiscriminate planting of any kind of tree" of which I complained so much will cease to be a practice with "responsible officers."

Requested that District Officers may be directed to select trees for road side planting with greater care than has hitherto been the case.

44. The mischief which is being done to brick buildings in Rangoon and other towns by the "*Peepul*" tree is now painfully evident. I need not again explain its destructive and therefore dangerous properties. I only desire that, for the benefit of all concerned, this tree may be rooted up wherever growing in Rangoon and other towns and replaced by a proper selection from the lists I have given.

The most tenacious of life and perhaps the most destructive of all trees is the "Peepul." Already much damage is being done to pucka buildings; it is therefore suggested that wherever planted in towns they may be rooted up again.

45 One of the greatest wants in our towns, and as a healthful sanitary arrangement perhaps the most important,

is a good system of latrines, &c.; a system whether public or private, which must be equally conducted on principles of decency and wholesomeness. Almost every one, who has studied this subject,—and there are not a few who consider themselves competent to give an opinion,—has a special idea of his own to recommend; and yet, the propositions and inventions, numerous as they have been, not one it may be truly said has come up to our expectations, when put into practice. Simplicity of construction and cheapness in their management, very small things in themselves, are really the alphabet of the successful working of such institutions. These and many other points are of vital moment, if public latrines are to be acceptable to the people who are to use them. It is in the development of the qualities essential to their maintainance and decency that our difficulties have been created. Had we simply to deal with one privy only, the matter would be comparatively easy, but it is in their multiplication in all directions which has caused all our hitherto devised schemes to assume a magnitude it is impossible to cope with.

The subject of Public and private latrines considered. A decent and wholesome system much required in Rangoon and other large towns.

46. Again, one great mistake has invariably been made in trying to substitute public latrines for private necessaries; that is, we have endeavoured to adopt our inventions to suit all classes, with a view of dispensing with the latter altogether. This error, and undoubtedly it is a very great mistake, has been forcibly pointed out by Mr Macrone, Asst: Secretary to the Chief Commissioner in the D. P. W. He thinks that, and I must allow that what he says appears sufficiently valid to deserve serious attention, in British Burma, while devising any plan of conservancy for natives, if to be successful, the following important points must be considered:—

The mistakes made in our attempts to introduce a system of Public Conservancy. The principle which should guide us in the future.

i.—What are the habits and wishes of the people.

ii.—What races of people have to be provided for, and are their customs all alike?

iii.—Is it advisable to force all classes, including women and children to frequent places of public resort of this nature?

iv.—Is it possible to prohibit private necessaries altogether?

v.—Is the dry system (Rev. Mr. Moule's) practicable throughout British Burma?

vi.—Is the wet system suited to all situations ?

vii.—If private places are to be disallowed, what will be the number of public ones required : for it is absolutely necessary that they should be conveniently situated and therefore numerous ?

viii.—How are they to be supervised ?

xi.—What is to be done with the soil ?

x.—How is the expense to be provided ?

The subject of Public and private latrines further considered.

47. All these points must be severally weighed, and then, when we have arrived at anything approaching to a satisfactory conclusion the best form of latrine has to be planned. Mr. Macrone agrees with me that the Burmese are as particular as we are in regard to privies. They like to have separate institutions attached to their houses quite as much as we do, and answering in every respect to what the word itself strictly implies, viz, privacy. For Public buildings, such as Bazaars, Public Offices, and in localities where large numbers of persons assemble together, public latrines would be highly useful and proper, and could be managed on the dry earth plan, out of local or other public funds: Again, Mr. Macrone considers, and I certainly agree with him that, the Burmese householders should be permitted, in the absence of a system of sewerage, to erect private latrines on a properly organized plan, a plan which permits of no cesspools, and obliges the soil to be removed daily in a decent manner at the expense of the owners in municipal carts constructed for the purpose.

Sanitary Commissioner recommend a regular system of sewerage for large towns.

48. For large towns, I have already recorded my opinion (vide Annual Sanitary Report for 1868, pages 16 and 17, paras. 38 and 39). I said, after showing how impossible it would be to introduce and work the dry earth system, "I am convinced in my own mind that a regular system of sewerage is the cleanest and most effectual remedy. I am satisfied that nothing in the long run will so thoroughly and cheaply get rid of all town sewage, as the plan I now suggest. Other schemes may very possibly be superior but they will be found in practice to fall through in their management, or for the want of money to successfully carry them out." I still hold to that opinion.

49 In the meantime however, something must be done, and it was with this view that I proposed the following make-shift. There is no doubt, notwithstanding the enormous difficulties which surround the subject, that a great deal is possible to be accomplished by the erection of good Public Latrines. Fully satisfied of this, I requested Colonel Stevenson, Commissioner of Arakan, in letter No 161 of the 26th November 1869, to order the construction of one or more Experimental Latrines on the plan suggested by Mr. Gubbins of the N. W. Provinces for the town of Akyab. I also desired that similar Latrines might be put up in purely Burmese towns and villages, that we could thereby be enabled to ascertain how they would answer in practice, before recommending their general adoption throughout the country. That Arakan should for the present remain the scene of operations in this respect I considered it best, because Colonel Stevenson in his letter No. 670, para. 4, informed me that he had the means at his disposal for the purpose, whereas others in the Tenasserim and Pegu divisions had not. I give the paragraph here in his own words. "That Mr Gubbins' system of Public Privies is generally applicable to this country I entertain not a doubt. The first point, as I need hardly remark to you is to ascertain what is wanted; that is, to ascertain the nature and extent of the evils to be overcome and the remedy. The next measure, namely to obtain funds is one with which I hope to be able to deal satisfactorily."

The Sanitary Commissioner recognising the necessity for immediate improvement in towns, consulted Colonel Stevenson with a view to the introduction into Arakan as an experiment of Mr. Gubbins' plan of Public latrines.

50. It should be remembered that the reason why Mr. Gubbins' system is considered "generally applicable" to Arakan is this, that it was originally contrived for natives of India, and that this class of people predominate very largely in some of the towns of that division of British Burma—especially so in Akyab, where the population is chiefly composed of foreigners, to the exclusion of Burmese and the natives of the country or Mughs.

Reason why Arakan was selected for experiment in the first instance.

51. Captain Plant, Deputy Commissioner of Myanoung, has submitted to me a very good plan of Public latrine, suitable to the Burmese and allied races. It is not unlike Mr. Gubbins' system. I hope to submit for the

Captain Plant's plan is a good one and adapted to natives.

approval of the Local Government, a combination of the good qualities of both these gentlemen's plans, as soon as I learn from Colonel Stevenson the result of the experimental trial in Arakan.

In the absence of a municipality it is almost impossible to do much good.

52. In the absence of a municipality it is impossible to carry out effectually any form of private latrine however much it might be suited for, or acceptable to the people.

Lock Hospitals sanctioned for Rangoon, Maulmain and Akyab, up to this date nothing has been done.

53. During the year the subject of Lock Hospitals has again been before the Government, and I understand sanction has been given to expend 10,000 Rupees (ten-thousand) on the erection of a proper building in Rangoon; besides further sums have been granted for the construction of similar institutions in Akyab and Maulmain. I believe that the Department Public Works is now taking the preliminary steps to utilize the grants made for this purpose to the very utmost, and we may confidently expect that accommodation for the venereal sick, &c., will very soon be available.

Lock Hospital at Thayetmyo opened in the month of June last. Good results have already been noted.

54. Fortunately provision was made in the Madras Budget to meet the expenses of a Lock Hospital at Thayetmyo. A building expressly put up for venereal cases had existed for sometime at this station, but funds were not forthcoming to enable the Civil authorities to open it. Fortunately, I say, provision was made in the Madras Budget, otherwise the Hospital would have still remained unoccupied. Dr. McAllum, the Civil Surgeon of Thayetmyo writes of this institution and the benefits which it has conferred on the European Troops thus:—"In June last a Lock Hospital was opened in this station, the benefit derived from this Institution has been great especially to the European troops stationed in the Cantonment. The admission from venereal in Her M.'s 76th Foot from 1st January to 30th June 1869 was 29, and 1st July to 31st December 1869 there were only 18 admissions. In the Royal Artillery also the benefit of the Institution has been greatly felt."

"I would beg to recommend that compulsory registration of all known prostitutes wherever residing should be carried out, as at present there are several prostitutes liv-

ing in the town who have not registered and are carrying on their trade and should any European soldier go with one of the women and get diseased the Superintendent of the Lock Hospital would naturally be called upon to explain the cause."

Voluntary system of Registration not sufficient. Upwards of thirty prostitutes left Thayetmyo for Prome and other towns to escape the Act.

55. The voluntary system of registration and regular attendance at a Lock Hospital by prostitutes in British Burma will never eradicate venereal diseases. The "Contagious Diseases Act" must be put into force in all our large towns, seaboard as well as inland, or venereal can never be stamped out or kept in abeyance even. In January last I visited Thayetmyo and after carefully seeing for myself the working of the Lock Hospital at this station, I wrote to the Chief Commissioner as follows:—"The working of the 'Contagious Diseases Act' in the town and station of Thayetmyo has, as far as the Cantonment is concerned, proved in one way a great success. The weekly venereal returns of H. M.'s 76th Regt. Foot, for sometime past have simply exhibited the word '*nil*.'

"Of course all interested in this subject, from this one fact alone, believe that the women are cured, and thus the absence of disease is accounted for. Permit me however, to dispel this hasty conclusion. I examined the subject when on the spot, and I discovered that the "Act" instead of inducing the diseased to register their names and go into Hospital, drove them away from the station; upwards of thirty of these wretched creatures having spread themselves among the southern towns. Before the Act was brought into operation we had the majority of the prostitutes living in one spot, now they are carrying on their business and spreading disease in each of the large towns on the Irrawaddy south of Thayetmyo, the greatest number having settled in Prome.

"14 Women only have registered their names as prostitutes in the little bazaar at Thayetmyo, chiefly I am informed, natives of India. So far the working of the Act may be considered a success, for certainly it is better to have no loose women than to have disease; yet there is a demand for more than 14 women at Thayetmyo and this I think is a serious matter where a large body of sturdy and half educated Europeans, and a whole Regiment of Native troops are located.

"Now I have a remedy, and that remedy is an easy one. It is this. Extend the Act to all the large towns—especially to Prome and Shwè-doung, both being situated near the frontier station of Thayetmyo and communication by boat and steamers, between the two places being constant. If this is done all the prostitutes will register as they cannot escape, or they will find the practice unprofitable and turn to more healthful pursuits".

Two distinct outbreaks of Cholera in the year. The first shewed itself in Toungoo in August 1868, and continued throughout nearly the whole of 1869; and the second commenced in Prome in latter end of the same year.

56. The Province was visited by two distinct outbreaks of Cholera during the year. The first visitation shewed itself in Toungoo in the month of August 1868. Toungoo is our eastern frontier (Military) station. My visit to it during the presence of the disease and the sanitary steps which were taken by Major McMahon, the Deputy Commissioner, are fully recorded in my Annual Report for that year. The disease spread in southerly and south-easterly directions and eventually extended itself in the districts of Bassein and Mergui, the last fatal case occurring in the month of October.

Mortality from Cholera in Tenasserim division not accurate, but still collected with care and as nearly so as possible.

57. The total mortality from this disease in the Tenasserim Division has not been given so fully as it ought to have been, the Officers of the Tavoy district having failed to submit returns. In many instances it was found impossible to obtain any reliable information after the fact, as the Hill Karens, directly Cholera shewed itself in their villages, vacated them and afterwards burnt them down, removing themselves to new clearings. The total deaths reported appear thus:—

| | |
|---|---|
| Hpagat ... ... ... ... ... | 12 |
| Tooyne ... ... ... ... ... | 30 |
| Kadoe ... ... ... ... ... | 1 |
| Maulmain ... ... ... ... | 29 |
| Amherst ... ... ... ... ... | 1 |
| Yea ... ... ... ... ... ... | 62 |
| Tavoy ... ... ... ... ... ... | 5 |
| Mergui ... ... ... ... ... | 181 |
| Mergui district ... ... ... ... | 255 |
| Other towns in district generally | 86 |
| Total..... | 662 |

58. From all reports Cholera had for some months visited Mandalay the Capital of Burma Proper with severity in the hot weather of 1868, (the rains do not commence in this part of the country until about July) and undoubtedly the disease spread in a regular course down to Toungoo on the Sittoung, which is situated immediately south of Mandalay, and at a distance only of 140 miles, and also followed the valley and trade routes of the Irrawaddy. It appeared at Toungoo as I have said in August 1868. Now the Shans and other traders in their passage down to this station are not influenced by the weather so much as the Burmese traders are in the Irrawaddy valley. The former do not travel altogether by water, whereas the latter are dependent for the safe navigation of their boats on the rise and fall of the river and to the prevailing winds. In the valley of the Irrawaddy, the main body of traders proceed north in the early part of the rains; the return trip being performed generally after the breaking up of the South-West Monsoon. Again, the coolies who annually emigrate south in search of work in the D. P. W., harvesting, manufactories of salt and gnâpee, and the cleaning and shipping of rice, move down in the end of November and throughout December. Thus Cholera if it be present in Mandalay may at any time be conveyed to Toungoo, overland, but as a rule not until the months of November or December will it be seen in the valley of the Irrawaddy. I am quite aware that Cholera can, and has been introduced into British Burma otherwise than from Mandalay; but I am not now writing the history of Cholera in Burma, I am treating only of a special outbreak and accounting for the difference in the time of its appearance on our eastern and western frontier in the two great valleys of British Burma: Again, when there is no Cholera at Mandalay the disease may be imported from elsewhere, from Munipoor for instance, down the Kindwen river—not an unfrequent occurrence,—one of the chief feeders of the Irrawaddy, and which enters the main stream 50 miles south of Mandalay; and it will appear in its usual haunts in the valley; but then Toungoo will escape altogether. It is necessary to bear in mind the position these two valleys of the Irrawaddy and Sittoung occupy in relation to the trade of Upper Burma, or what I am now desirous of explaining will not be understood. I maintain that the Cholera seen in both

Cholera was reported from Mandalay the Capital of Burma Proper in the hot weather of 1868. It spread to Toungoo and Prome and followed our trade routes.

directions was one and the same disease, that is, the two distinct epidemic courses took their origin in one source or fountain head—Mandalay. The difference in their time of spreading being entirely regulated by season and the movements of the people. How the disease got to Mandalay is another question altogether, although I hope to be able to answer it by and bye. Cholera it may be said never visits British Burma in the rains,—that is when we have a proper South-West Monsoon.

The dates of outbreak of Cholera in the Pegu and Arakan divisions. Probable manner in which the disease was developed into a serious epidemic in the Akyab district.

59. Cholera appeared in Toungoo in 1868, and spread down the hills to Mergui. It appeared in Prome in September and was extended to Rangoon in the month of December, ceasing in this direction at the end of 1868. Cholera broke out in Akyab as a severe epidemic in the month of February 1869. The first case of the disease however recorded in the district proved fatal in December 1868. Doctor Mountjoy furnished this information, but not the date. This I hold was a part of the same general Choleraic influence prolonged to Arakan, most probably by human intercourse, which was present in other parts of British Burma and introduced from Mandalay, as I have shewn, or to speak more correctly, from a northern locality without our frontier. The germ of Cholera, whatever that may be, was present in the atmosphere, in the water, in the soil, or whatever medium it selects for its *habitat;* and under the fostering conditions of season and a filthy crowd of fatigued parsimonious natives of Chittagong, travelling with empty stomachs to the rice markets, it was developed by them into a serious epidemic. I have entered more fully into the question of the spread of Cholera in Arakan in my special report on the Town and Station of Akyab, which will be found further on. It is unnecessary therefore to say more here.

Second outbreak of Cholera. The course it took. Dates shewn in the Cholera Map. Sanitary Commissioner made a special visit to Nyoungdoon. Papers on the subject to be found in appendix.

60. The second outbreak of Cholera occurred towards the end of the year 1869. The disease had again been introduced from Upper Burma. On this occasion, although at first it shewed a tendency to spread into a serious epidemic in Prome, the disease quickly subsided. Wherever the coolies travelled, there Cholera shewed itself; and from date to date it can be traced until it reached Rangoon, when it seemed to expend itself after at-

tacking several persons; the first to succumb being a Captain Robinson, an European, of the British Barque "*Empress.*" This ship was lying east of the town near "Dunneedaw." He died on the 15th December 1869. At Nyoungdoon the depôt, for the change of produce, between the fresh and salt water boats, the disease threatened to become stationary. I therefore proceeded to the spot, and I hope I can say without the appearance of affectation that my presence there was attended by the happiest results. The papers relating to this visit will be found under their proper heading.—(See appendix).

Cholera among the European troops at Thayetmyo: History of its introduction. Date of first case 9th May, date of cessation 8th September.

61. It has been noticed for several years that Cholera is very apt to break out near the bank of the river at Thayetmyo, among the European troops stationed there, in the very hot weather. The soil is gravelly and conglomeratic, covered as well as interspersed with fossil wood in abundance. I did not notice laterite here. It may be present but I have not seen this rock at Thayetmyo. In 1854 and 1855, I served at this station attached to the 2nd B. E. Fusiliers. We occupied the bank of the river, in camp, near the present fort, and Cholera appeared among us in the hot weather. The disease lasted only a short time, but during that limited period several deaths took place. In the month of May (9th) 1869, this disease again recurred in the hot weather among the men of H. M.'s 76th Foot. On this occasion it continued off and on up to the month of September (8th), but we must remember that very little rain fell throughout this period and that the weather remained in consequence oppressively hot. On the 25th April the Civil Surgeon of Thayetmyo was informed that Cholera had made its appearance in the coolie lines north of the Cantonment, and separated from it by a goodly sized nullah. The men occupying these lines, or rather village, were laborers attached to the Engineer department. A few sweepers of H. M.'s 76th Regt.; and a number of Burmese also resided here, but the largest portion of inhabitants were natives of India. The village is described as being "extremely dirty and filled with refuse cows dung &c. &c." Dr. McAllum says that on visiting "the place of burial of the village we saw several newly covered graves and it was told us that all these were the burial places, rather graves, of people who had recently died of Cholera. There were altogether about fifteen in number. On inquiries being made among the villagers, we could trace from their statements, the

deaths altogether of about 8 patients including children. In fact the disease must have been among them since about the middle of April—but no report had been made of the matter." * * * "No other cases of Cholera occurred in the village after the 25th April."

Date of outbreak of Cholera in the village or coolie lines, 16th April. First case in Cantonment reported by the Magistrate to have taken place on the 7th May and by Civil Surgeon 5th May.

62. Major Munro, the Assistant Commissioner at Thayetmyo gives the 16th April as the date on which cholera first appeared in this village. He states that "12 persons were attacked, of whom 9 died," and that on the 7th May the first person ("store lascar") was seized in the Cantonment. Dr. McAllum on the other hand, gives the date of the first man attacked as "the 5th of May—a commissariat dhooly bearer employed in the Government Bakery and living in a village called Shai-bustee opposite to the cooly lines," but on the garrison side of the nullah and within Cantonment limits.

First case in Her M.'s 76th Foot 9th May. 12 cases and 8 deaths and 1 from Choleraic Diarrhœa.

63. On the 9th May, Cholera shewed itself in Her M.'s 76th Foot. A woman was the first attacked and between the 9th and 25th May there were 12 cases of Cholera and 8 deaths, and 1 from "Choleraic Diarrhæa."

Disease reported to have travelled against the wind skipping Artillery lines up to 29th May. Both town Artillery and native troops escaped.

64. The disease is said to have travelled against the wind skipping the Artillery barracks which lie between the nullah and H. M.'s 76th lines. Dr. McAllum describes two instances in which the disease was probably spread by "contagion" which deserves perusal. Dr. McAllum says that the outbreak ceased on the 29th of May. The town of Thayetmyo and H. M.'s 36th Regiment M. N. I. remained free from the disease.

Dr. McAllum could not trace the cause of the outbreak in Her. M.'s 76th Foot.

65. Dr. McAllum concludes his report in these words. "The cause of the outbreak among the families of H. M.'s 76th is shrouded—is yet in mystery. No cause can be traced for it. The sanitary condition of the Barracks was good at the time of the outbreak."

Cholera ceased in all June, and broke out again in July. Both town and Her M.'s 76th Foot suffered. Particulars of first case overlooked.

66. Cholera disappeared from Thayetmyo in all June. It again however commenced in July, and here the particulars in connection with the first case were again inadvertently overlooked.

On this occasion the town as well as H. M.'s 76th suffered. The extent of the mortality &c., is entered in the Cholera map. The disease lingered in H. M.'s 76th Regiment and did not entirely cease until the 8th of September 1869. The following will show the particulars in regard to the extent of the outbreak in this regiment.

*Particulars of the outbreak of Cholera in H. M.'s 76th Foot at Thayetmyo.*

Date of first case—9th May 1869, a woman.

Date of disappearance of disease 8th Sept. 1869.

| | | |
|---|---|---|
| No. of Barracks in which cases occurred | No. 7...1 | Case. |
| | No. 10...2 | do. |
| | No. 11...4 | do. |
| Band | 1 | do. |
| Sergeants | 1 | do. |
| Separate Bungalow | 1 | do. |
| Total | 10 | |

Number of men attacked 12, recovered 9, died 3.
Do. women do. 3, do. 1, do. 2.
Do. children do. 6, do. 1, do. 5.

Character of the weather during outbreak said to be oppressively hot producing feelings of great lassitude. Water obtained from wells and reported as abundant.

67. The direction of the wind during the outbreak was S. and S. E., with occasional gusts from the north and east. The meteorological phenomena are not recorded at Thayetmyo, Instruments are wanting. The weather was said to have been "oppressively hot producing feelings of great lassitude." The water supply was described as abundant, good, and wholly procured from wells. Water from a suspicious well was submitted for analysis and found to be wholesome. No one has been able to ascribe the outbreak to local origin, although equal difficulty has been experienced in trying to trace it to importation. I think however, that we are quite justified in believing that the Cholera which was known to be present in the higher valley of the Irrawaddy, in May, June, July and August spread to Thayetmyo. The intercourse between the two places is very great indeed. Thayet-

myo lies on the main arterial trade route of the country, and although customs dues are not levied, every boat in its passage up or down the river is made to touch at the station, and its owner has to report the character of his freight &c., &., to the Assistant Commissioner, who is in charge of the Frontier Customs Department as it is called. The weather was most unusual and favorable to the propagation of the disease. Little or no rain fell throughout the Monsoon, until the month of September when the disease died out. The water used by the troops is said to have been obtained from wells. In the very hot weather I heard that water had been procured from the direction of the river in the usual Government water barrel bullock carts of India, and taken into the Cantonment, but for what purpose it was used has not been explained.

Could not the regimental sweepers living in the infected village have conveyed the disease to the European Lines? This class of persons with their soiled hands and brooms, I should think of all menials the most likely to spread Cholera, if there is the slightest shadow of truth in our belief that the excretions of the sick contain the chief source of contagium: moreover, they would be more apt to infect the utensils of the married quarters first, as it is not an uncommon practice in British Burma for poor married Europeans, who cannot afford to engage the services of an ayah or other servant, to employ sweepers about their houses in other capacities than as mheters. In some families famale sweepers assist daily in washing and dressing the children. There are other points in connection with the subject of the spread of Cholera to Her M.'s 76th Foot, which have not as far as I know, been half investigated. For instance, were there no prostitutes or drinking shops in the village and did not the soldiers frequent them? (the village has been recently cleared away).

Sanitary Commissioner particularly desired the Civil Surgeon to examine all the facts in connection with the first case of Cholera. He could not discover anything.

68. One peculiar feature of this outbreak was this,—that no case occurred during the month of June. Here was an opportunity to gain some insight into the origin of the disease, but it was lost. I desired Dr. McAllum, the Civil Surgeon to examine all the facts in connection with the appearance of the first case, and to leave no stone unturned in endeavouring to obtain correct information. This I know he did, but it is more easily said than done. The first case was not discovered.

Sanitary Commissioner believes the outbreak to have been part of the same visitation described in para. 56. Difference in time fully accounted for.

69. I suppose I need not state that, I am sufficiently satisfied in my own mind, this outbreak at Thayetmyo was a part of the same Cholera influence which I have described as the first visitation in paragraph 56 of this report. The difference in time can be easily accounted for. The disease did not cease for months in Upper Burma where the rains set in very late; and Thayetmyo presented most favorable opportunities for its spread in the absence of the usual rainfall, scarcity of water,—if not in the European lines most certainly elsewhere—and constant inter-communication. It may very probably be said that the water supply was never deficient, but did none of the wells dry up? If all the wells at Thayetmyo are considered necessary in the usual dry weather, how much more so must they be during a drought such as this season in its earlier months really presented, and when some of the wells did dry up. The scarcity would surely be measured by the deficiency of the sources of supply which became useless.

The town of Thayetmyo has been relaid out. The Sanitary Commissioner at his visits found the town clean and healthy. He considers the state of Thayetmyo most creditable to the local authorities!

70. Since I wrote my special Sanitary report on the Town and Civil Station of Thayetmyo, vast changes have been made. The town may be said to have been relaid out. The roads are wide and well constructed. The drainage is good, and the public health has greatly improved. During my second and third visits I still found rapid sanitary progress being made, and I am bound to say that Colonel Horace Browne, the Deputy Commissioner, who is no novice in sanitary science, and Major Munro, the Assistant Commissioner in immediate charge, deserve the thanks of Government for the very excellent and healthful condition in which they keep the town of Thayetmyo. By their influence the people attend to the cleanliness of their houses which are as clean and as tidy underneath as one could possibly wish to see. The out-houses too I had very little fault to find with. Of course the credit is due to Captain Twynam for the Engineering works at this station. He laid out the town, built the drains and constructed the roads &c., and certainly no better plan could have been devised than the one he has selected for this town.

An improved system of latrines required. Recommendations for an improved water supply.

71. There are only two things urgently required now to make Thayetmyo a model town, and they are, a decent system of la-

trines both public and private, and an abundant supply of good potable water, so managed that, it shall not be possible to pollute it by surface drainage or by percolation. The former is at present receiving attention at the hands of Colonel Browne. I forwarded to him together with letter No. 240 dated 12th February 1870, a set of plans for public latrines for natives and requested his opinion. His reply has not yet been received. As to the water supply, it can be obtained from wells on the spot, if they are sunk in suitable places. The soil is good, chiefly composed of gravel, and when wells are constructed in sufficient numbers, they must be supplied with good strong pumps and have their outlets covered over with sound masonry.

Every thing was done to mitigate and stay the spread of the disease that could be done by Major Munro, and Doctor McAllum. The Sanitary Commissioner's instructions were fully attended to.

72. My instructions during the epidemic were carried out by Major Munro and Doctor McAllum as far as they could be, and everything was done which common sense and experience dictated. The steps taken to mitigate and arrest the disease are fully detailed in the several reports and letters on the subject, which have been submitted by those gentlemen.

Principal Inspr. General of Hospitals' letter No. 803, dated 6th March 1869, on subject of vaccination and inoculation submitted for consideration. Sanitary Commissioner entirely concurs on all points.

73. Copy of letter No. 803, dated the 6th March 1869, from the Principal Inspector General of Hospitals, Indian Medical Service, Lower Provinces, on the subject of vaccination and inoculation, was submitted to me by the Chief Commissioner on the 10th August, following, together with copies of papers &c., by Doctor Nisbet, Civil Surgeon of Bassein, on the same subject, for consideration. I replied as follows, in letter No. 83, dated 12th August 1869 :—"He says (Principal Inspector General) in para. 2 'I would suggest the enactment that where effective vaccination can be brought to towns and villages under efficient supervision, contemporaneous Small Pox inoculation should be penally forbidden,' and in para. 5, "wherever vaccination can be effectually brought to the doors of the villagers and towns people there I would strictly prohibit the propagation of the deadly poison."

"The difficulty in this country with our present vaccine establishment is to 'bring effective vaccination' to the doors of the people, and secondly the 'efficient supervision' so necessary

in this practice is totally wanting. And in proof of what I say, vide para. 10, of Doctor Nisbet's address to the people, he admits that vaccine lymph and Small Pox virus got mixed up together by his own vaccinators, and the subjects operated upon with this double process were returned as successful cases.' Again, look at the manner in which vaccination was lately conducted in Prome.—(Appendix.)

Wherever effective vaccination is brought to the doors of the villagers and towns people, contemporaneous inoculation must in such fortunate places be strictly prohibited. Of this however, before any orders are issued on the subject, I would strongly advise the Administration to be fully satisfied.

I read a copy of Doctor Nisbet's address to the people, and the translation, some time since, and the reason I did not recommend its publication and wide circulation in the District was, that I knew he could not afford the people the protection against Small Pox, he advised them to adopt in lieu of inoculation. In fact at the very time he wrote his address the practice of vaccination in Bassein was a "total failure" to use his own words, and up to the time I left the station on the 18th April last, he had not succeeded in introducing it, although Small Pox was not epidemic in the district.

Sanitary Commissioner proceeded to the valley of the Sittoung in month of September on account of an outbreak of Small Pox. The disease was first introduced into the Town of Sittoung by two inoculated children from the Town of Pegu.

74. In the month of September, I proceeded to the valley of the Sittoung, Small Pox having appeared in the delta and towards the town of Beeling. I found that two children who were suffering from ingrafted Small Pox, had been removed from the town of Pegu to Sittoung. The disease was afterwards spread throughout the station and to the southern towns of Wombadow, Korkadoote, Beeling and surrounding villages by means of inoculation. From statistics it has been discovered that in India Small Pox during the spring and the hot months reaches its maximum of severity, while in the months of August, September, October and November, if left to itself it will die out. What is true of this disease in India holds good in British Burma. Here then we had a chance of preventing the continuance of Small Pox into the months most favorable to its propagation, by prohibiting the inoculators extending their filthy and dangerous practice through that period of the year known to be inimical to the development of the disease.

75. The towns I have mentioned, and I may say the district generally were entirely free from epidemic Small Pox, in fact, there was not a case of the disease until introduced by the inoculators. Colonel Ryan the Commissioner of Tenasserim, Captain Watson the Deputy Commissioner of Shwè-gyeen, and the Assistant Commissioner and other subordinates under them discouraged the practice of inoculation, and Small Pox quickly and almost entirely ceased. The inoculators however were not to be so easily frightened out of the handsome profits which they obtain from this practice among an ignorant and timid people. No sooner were our backs turned than on went the practice again. The cold weather set in, and with it the disease took its propagation into its own hands, and spread itself throughout the district. Vaccination was set on foot, and much good is being done. No great mortality has as yet taken place.

All officers in this district set their faces against the practice of inoculation, and Small Pox almost ceased, but when our backs were turned the inoculators commenced again. The disease still prevails, mortality slight.

76. The inoculators proceeded as far as Toungoo, and in the month of October I warned Captain Hughes, the Deputy Commissioner of that station of their approach. He placed all the obstacles he could in their way, but they introduced the disease from the neighbouring villages. Captain Watson, late Deputy Commissioner of Shwè-gyeen and his successor Mr. John Davis, were more fortunate. They threatened the inoculators under a section of the Penal Code against spreading "contagious and infectious diseases," and the town escaped Small Pox. The progress of the disease in Toungoo will be reported on hereafter. (*a*)

The inoculators proceeded in the direction of Toungoo. Sanitary Commissioner warned Captain Hughes the Deputy Commissioner. He has saved Toungoo from a serious extension of the disease. Captain Watson and Mr. J. Davis have in like manner kept Shwè-Gyeen entirely free.

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(*a*) NOTE :—I have recently returned from Toungoo where I found it necessary to proceed owing to a threatened extensive outbreak of Small Pox. The Chief Commissioner felt anxious also about the station as it contains a large body of European and other troops; and being situated close to the Frontier, I considered it advisable to be on the spot. The active measures adopted by Captain Hughes have, it may be said, stamped out Small Pox. The disease has almost entirely disappeared—so much in favour of the prohibition of inoculation in districts where epidemic Small Pox is not present. Anterior to my departure from Rangoon for this station, I forwarded some vaccine lymph obtained from the arm of a child who had been operated upon by Doctor Booth, Officiating Health Officer of Rangoon, with virus procured from England, and which had been taken direct from the Heifer. I also sent similar supplies to Shwè-gyeen and Mergui. As yet I have not heard what results followed its use, whether successful or otherwise. I am satisfied however of one thing, and that is, that our vaccine lymph obtained from the Presidencies is generally spurious. The children operated upon by Doctor Booth as I have mentioned took admirably without a single failure, I have seldom seen in India finer matured vaccine vesicles. I would therefore suggest, that in future all vaccine lymph for use in British Burma, be procured, regularly, direct from the animal in England and transmitted to this viâ the overland route in capillary tubes.

Slaughter houses and Bazaars. The profitableness of these institutions shown.

77. In paragraph 28 I said that, "for the sanitary improvements of towns and to meet current expenses in repairs to old works, and for conservancy, it is absolutely necessary to lay our hands on all possible sources of municipial income, and no more remunerative works can be constructed with this view than Slaughter houses and bazaars." I have shewn the profitableness of Slaughter houses. I now desire to shew the large percentage derivable on original outlay from bazaars when held and conducted by municipalities. There is no doubt that all bazaars should be held by the Government for local purposes, or by the municipal authorities wherever such exist. In fact they should always be municipal institutions. The following table exhibits the first cost &c., of eleven of the Government bazaars constructed in British Burma within my time. Several others are in course of building, but it is not necessary to mention them in this Report.

| Names of Bazaars. | Outlay. | Net returns of each Bazaar during the year 1868-69. | Rate per cent. returned for the outlay during 1868-69. | Balance due to Income Tax fund for loans received. | Remarks. |
|---|---|---|---|---|---|
| Prome District. | | | | | |
| Thayetmyo - - - - - - | 57,731 | 8,974 | 15.54 | 6,000 | |
| Prome - - - - - - - | 67,117 | 18,431 | 27.46 | | |
| Shwè-doung - - - - - | 31,274 | 9,408 | 30.08 | | |
| Myanoung District. | | | | | |
| Henzadah - - - - - - | 26,423 | 10,120 | 38.28 | | |
| Kyangheen - - - - - - | 29,510 | 2,552 | 9.64 | 16,659 | |
| *Myanoung - - - - - - | 27,270 | 1,829 | 6.70 | | |
| Yeh Gheen- - - - - - | 10,952 | 1,135 | 10.36 | 10,592 | |
| Shwe-gyeen District. | | | | | |
| Kyketho - - - - - - | 7,405 | 2,683 | 36.23 | | only just opened. |
| Shwè-gyeen- - - - - - | 54,052 | 6,177 | 11.32 | | |
| Mergui District. | | | | | |
| Mergui - - - - - - - | 45,135 | 4,290 | 9.50 | | |
| Toungoo District. | | | | | |
| Toungoo - - - - - - | 71,064 | 17,830 | 25.09 | | |

This return was kindly furnished me by Colonel Fraser, C. B. the Chief Engineer of British Burma.

78½. In the 22nd paragraph of my Report on the outbreak of Cholera in Akyab I said :—"In many parts of the country towns have become healthy under the fostering care of local officers. Sanitary changes have been effected of considerable magnitude without force being employed, without interfering with the prejudices of the people and without money." In the Sanitary Commissioner's, with the Government of India, letter No. 632, dated Simla 22nd July 1869, Dr. Cuningham said : "as I am anxious to collect facts of this nature with a view to the preparation of a report on general sanitary progress, which has been called for by the Government of India, I shall be glad if you will favor me with such details regarding any particular places in British Burma which you think would prove of interest." In reply, in letter No. 107, dated Camp, Toungoo, the 20th of October 1870, I furnished the following : Captain Hughes says :—"During the year 1866-67, when a murrain, very similar to the rinderpest in England attacked the Cattle in British Burma, committing great depredation among the buffaloes, and which for sometime nearly crippled the resources of the laboring classes, the Officiating Commissioner of the Tenasserim and Martaban Provinces drew up a paper, pointing out among other things the desirability, if not necessity, of the attention of the villagers being given to the supply of water, on which, during the four months of the dry weather, the health of their cattle so much depended, and with the impurity and filthiness of which the epidemic was thought to be closely associated. I was then the Assistant Commissioner of the Martaban Division of the Amherst District, where the disease was unusually rife, and acting on the suggestions of the paper referred to, I commenced by instilling into the villagers on the sea-coast, where water was most scarce, to dig fine tanks, fence them round, and thus afford to their cattle, as well as to themselves, water infinitely superior to the stagnant brackish fluid which they as well as their cattle had been accustomed to drink, and to which the disease among the cattle, and oft repeated attacks of Cholera among themselves might be and have been attributed. The result was that in the Martaban Sub-division upwards of a dozen fine tanks were completed, which might judging from

Works undertaken by the people themselves and at their own expense. Capt. Hughes' account of what was done in this manner in the Thatone township.

my personal inspection of the works that had to be done and were done, be estimated as having cost at least 300 rupees each, and this was effected, with the exception of Rs. 300 or 400 given by the Government, solely by the villagers themselves. This instance is only one in many I could quote as proving how soon the Burmese, as a people, are keenly perceptive of any measures that serve to tend to their welfare and good, if only their normal apathetic nature can be roused up to action. The result of the above works, in a sanitary point of view, is incalculable, as could be appreciated by any traveller who might take the sea-board route from Maulmain to Thatone during the months of March and April."

Additional works of magnitude carried out by the people under Colonel David Brown.

79. In addition to this I said: "The town of Prome, containing a population of over 20,000 inhabitants in 1857-58, was levelled to the ground by the people, and rebuilt according to an improved plan which the then Deputy Commissioner offered to them. The road sides were planted with trees and drains cut, and I believe without one penny of expense to Government. The people of Shoay-doung, a large town, followed in the footsteps of Prome. They pulled down and rebuilt their town and planted trees &c., of their own free will, on learning the advantages to be gained by increased room, wider streets, and good drainage. Keythey another large town, was similarly improved by the people themselves; and now, although on the borders of one of our most extensive swamps, is one of the healthiest in British Burma. All these towns are situated on the left bank of the Irrawaddy. Inland towns, moreover, were one after another benefitted in like manner. Poungday 37 miles south-east of Prome, an enormous straggling and unhealthy town was laid out, and it is now clean, well ventilated, has good roads, and has greatly improved in health. The people of every village in the Prome district of any size, now desired the Deputy Commissioner, Colonel David Brown, to improve their condition, and in many instances before that officer was transferred to the Commissionership of the Tenasserim Division, healthful changes were made. These are some of the changes of considerable magnitude, which have been brought about without money, that is Government money—Municipal or Imperial—by local officers exerting their influence with the people in a right direction."

80. Cowah a village situated half way between Rangoon and Pegu was burnt down during the year. Major Lloyd

the Deputy Commissioner of Rangoon, induced the people to improve their town while the opportunity presented itself. In consequence of this interest displayed by the head official of the district in their welfare, the people rebuilt their town on an excellent plan given to them by that officer. They built their new houses in correct lines, 12 feet apart from each other, well raised from off the ground, and formed a good road, about 90 feet in width from one end of the place to the other and nearly half a mile in length. More than this, they metalled it throughout with brick and sand. I must say that I was more than pleased with the very cleanly and well ordered state in which I found this town at the date of my visit in September last.

Works executed by the people at their own cost at Cowah, under the direction of Major Lloyd, Deputy Commissioner of Rangoon.

81. At Chyek-Thaw in the Rangoon District the people have made a bund about ¾ of a mile in length and metalled it, to keep the river water from flooding their cultivation and town generally. This bund runs the whole length of the town and must have cost a large sum of money.

Further works carried out by the villagers of Chyek-Thaw in the Rangoon District.

82. At Toungoo the Deputy Commissioner, Captain Hughes, is again doing a vast amount of good by directing the people to erect their works of merit in suitable situations. At present they are constructing first class wells throughout the town in places selected by him.

The towns people of Toungoo under Captain Hughes' direction are supplying the station with good wells at their own expense.

83. All over the country the same desire exists among the people to spend their spare cash on works of public utility, and I think I am more than justified in repeating here what I have said in another place, *viz*: that when the cry is raised of "no funds to carry out town improvements at the disposal of the local authorities" that such a cry is a very unsatisfactory excuse for doing nothing at all. I said, "To me and I feel confident that the Administration will agree with me, this line of argument when put forward by local officers is a direct evidence of a want of interest in the welfare of the people and towns placed under their charge; a direct acknowledgment that they do not exercise the power given to them as Magistrates, or use their influence and guide the vast resources which the people are ready to

The people generally show a willingness to spend their spare cash on works of merit and public utility.

employ on useful public works in the most advantageous directions. The custom inherent among the people of British Burma of constructing public tanks, wells, bunds, travellers rest houses, roads, and bridges &c., when they have the means, might be with judicious management, turned to good account: And when this is not done, I cannot help thinking that local officers neglect a first duty."

Works of merit and public utility undertaken solely by the people in the three divisions of British Burma shewn separately.

84. In connection with this subject, I beg to subjoin a list of some of the Works of merit undertaken solely by the people of the country, that is, entirely by themselves and at their own expense, during the year 1869. This list which is a very incomplete one is sufficient for my purpose. It speaks for itself. I have entered the cost of construction opposite each work.*

ARAKAN DIVISION.

| | | | | Rs. |
|---|---|---|---|---|
| Zayats, or travellers rest houses, .... ... | No. | 3 | Cost | 480 |
| Tanks... ... ... ... ... ... ... ... .. | No. | 12 | do. | 2,667 |
| Bridges..... ... ... ... ... ... ... | No. | 3 | do. | 530 |
| Roads... ... ... ... ... ... ... ... | No. | 2 | do. | 270 |
| Wells... ... ... .. ... ... ... ... | No. | 3 | do. | 650 |
| Caravansary..... ... ... .... ... ... | No. | 1 | do. | 600 |
| Grand Total Rs. | | | | 5,197 |

TENASSERIM DIVISION.

*Maulmain District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats... ... ... ... ... ... ... ... | No. | 3 | Cost | 1,450 |
| Tanks... ... ... ... ... ... ... ... | No. | 1 | do. | 150 |
| Wells ... ... ... ... ... ... ... | No. | 2 | do. | 400 |
| Elephant Sheds ... ... ... ... ... ... | No. | 1 | do. | 150 |
| Wharf... ... ... ... ... ... ... ... | No. | 1 | do. | 1,100 |
| Total Rs | | | | 3,250 |

*Amherst District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats... ... ... ... ... ... ... ... | No. | 15 | Cost | 3,680 |
| Tanks... ... ... ... ... ... ... ... | No. | 5 | do. | 820 |
| Bridges ... ... ... ... ... ... ... | No. | 9 | do. | 2,465 |
| Roads... ... ... ... ... ... ... ... | No. | 7 | do. | 4,175 |
| Stone wall ... ... ... ... ... ... ... | No. | 1 | do. | 315 |
| Total Rs. | | | | 11,455 |

* This list is taken from the *British Burma Gazette* Nos. 12, 15 and 16; dated 9th April, 30th April and 7th day 1870.

*Tavoy District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... .. ... ... ... ... | No. | 1 | Cost | 100 |
| Tanks ... ... ... ... ... ... | No. | 1 | do. | 250 |
| Bridges ... ... ... ... ... ... | No. | 2 | do. | 310 |
| Roads ... ... ... ... ... ... | No. | 7 | do. | 1,110 |
| Wells ... ... ... ... ... ... | No. | 1 | do. | 105 |
| | | | Total Rs. | 1,875 |

*Shwè-Gyeen District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 11 | Cost | 5,525 |
| Wells ... ... ... ... ... ... | No. | 8 | do. | 812 |
| | | | Total Rs. | 6,337 |
| | | | Grand Total Rs. | 22,917-0-0 |

PEGU DIVISION.

*Rangoon District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 43 | Cost | 14,909 |
| Tanks ... ... ... ... ... ... | No. | 30 | do. | 7,172 |
| Bridges ... ... ... ... ... ... | No. | 14 | do. | 2,629 |
| Wells ... ... ... ... ... ... | No. | 12 | do. | 2,875 |
| Kyoungs ... ... ... ... ... ... | No. | 81 | do. | 57,999-8-0 |
| Tazoungs... ... ... ... ... ... | No. | 12 | do. | 4,598-0-0 |
| | | | Total Rs. | 90,182-8-0 |

*Bassein District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 15 | Cost | 3,675 |
| Tanks ... ... ... ... ... ... | No. | 6 | do. | 2,450 |
| Bridges ... ... ... ... ... ... | No. | 5 | do. | 400 |
| Roads ... ... ... ... ... ... | No. | 5 | do. | 934 |
| Wells ... ... ... ... ... ... | No. | 11 | do. | 1,504 |
| Jetty ... ... ... ... ... ... | No. | 2 | do. | 381 |
| | | | Total Rs. | 9,344 |

*Myanoung District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 26 | Cost | 4,842 |
| Tanks ... ... ... ... ... ... | No. | 10 | do. | 2,530 |
| Bridges ... ... ... ... ... ... | No. | 20 | do. | 3,384 |
| Wells ... ... ... ... ... ... | No. | 70 | do. | 9,306 |
| Kyoungs... ... ... ... ... ... | No. | 101 | do. | 30,727-2-0 |
| | | | Total Rs. | 50,789-2-0 |

*Prome District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 14 | Cost | 6,108 |
| Bridges ... ... ... ... ... ... | No. | 2 | do. | 800-8-5 |
| Wells ... ... ... ... ... .. | No. | 6 | do. | 1,030 |
| | | | Total Rs | 7,938-8-5 |

*Toungoo District.*

| | | | | Rs. |
|---|---|---|---|---|
| Zayats ... ... ... ... ... ... | No. | 9 | Cost | 3,120 |
| Bridges ... ... ... ... ... ... | No. | 2 | do. | 2,280 |
| | | | Total Rs | 3,400 |
| | | | Grand Total Rs | 1,61,654-2-5 |

Grand total for the three Divisions of British Burma Rs. 1,89,768-2-5.

The sum entirely spent by private persons Not one pie of Government or municipal money is included.

85. It is the substitution of indirect control for the present disregard, which I would like to see exercised over such vast resouces by District Officers. Were this influence used with discretion it would be distinctly a step forwards. It is hard to say whether all this money has been judiciously spent. This at any rate is quite certain, all that has been done with it has been done by voluntary effort, not one pie is represented as the wanton waste of public money. Take these figures in connection with the income derivable from Municipal funds throughout the Province, the particulars of which I shall give further on, and let us be cautious in some quarters how we exclaim "no money" for sanitary works. Officers should make the most of the funds within their reach and this I maintain as a rule they do not do.

NOTE :—ZAYAT, a travellers resting house KYOUNG, a priests dwelling or school house. TAZOUNG something similar to a Kyoung in appearance and set at the entrance to Pagodas and other sacred places.

# PART I.

## PUBLIC HEALTH.

86. The following documents have been consulted in drawing up this report.

Documents consulted in drawing up the Health Report.

| Division. | Author. | Number and date. | Date of Receipt in Sanitary Commissioner's Office. |
|---|---|---|---|
| ARAKAN. | Captain Prendergast, Offg. Magte. Akyab.... | Report No. 37, dated 29th Jany. 1870 | 4th February 1870. |
| | Doctor W. Mountjoy Civil Surg. Akyab ... | Report No date. | 2nd April 1870. |
| | J. K. Macrae Esq., Dy. Comr. Sandoway..... | Forwarding letter No. 173, dated 14th Jan. 1870. | 4th February 1870. |
| | A. Thomas Esq., Medical Charge Kyouk-Phyoo..... | Report dated 1st January 1870. | 4th February 1870. |
| | J. Treacy Esq., Deputy Commissioner Sandoway..... | Forwarding letter dated 5th February 1870. | 3rd March 1870. |
| | C. E. Pyster Esq., Medical Charge Sandoway. | Report dated 2nd February 1870. | 3rd March 1870. |
| PEGU. | Capt. Evanson, Magistrate, Rangoon... ... | Remarks dated 1st March 1870. | 2nd March 1870. |
| | J. J. Heffernan Esq., Civil Surgeon Rangoon. | Report dated 15th January 1870. | 2nd March 1870. |
| | Dr. A. C. Nisbet, Civil Surgeon Bassein..... | Report dated 21st March 1870. | 20th April 1870. |
| | Capt. W. Plant, Deputy Commissioner Myanoung..... | Remarks dated 2nd February 1870. | 30th January 1870 |
| | H. Godbier Esq., Medical Charge Myanoung ... | Report dated 1st January 1870. | |
| | Lieut. Colonel Browne, Deputy Commissioner Prome... | Remarks dated 3rd March 1870. | 18th March 1870. |
| | J. White Esq., in Medical Charge Prome... | Report dated 1st January 1870. | 18th March 1870. |
| | Major W. Munro, Asst. Commissioner Thayetmyo..... | Covering Report. No date. | 18th March 1870. |
| | D. McAllum, M. D. Civil Surgeon Thayetmyo... | Report dated 14th February 1870. | 18th March 1870. |

| Division. | Author. | Number and date. | Date of Receipt in Sanitary Commissioner's Office. |
|---|---|---|---|
| PEGU, *Contd.* | Captain W. Hughes, Deputy Commissioner Toungoo..... ..... | Remarks. | 15th January 1870. |
| | Dr. C. Parker, Civil Surgeon Toungoo..... | Report dated 24th March 1870. | 2nd April 1870. |
| TENASSERIM. | G. E. Barr Esq., Magistrate Maulmain... ... | Forwarding Memo. No. 64, dated 5th March 1870. | 7th March 1870. |
| | George Marr Esq., M. D. Civil Surgeon, Maulmain..... ..... ... ... | Report dated 2nd March 1870. | 7th March 1870. |
| | J. C. Davis Esq., Offg. Deputy Commissioner Shwè-gyeen..... | Forwarding Memo. No. A 3, dated 18th Jany. 1870. | 24th January 1870. |
| | J. G. Cooper Esq., Hon. Assistant Surgeon in Medical Charge Shwè-gyeen..... ..... ..... | Report dated 1st January 1870. | 24th Jany 1870. |
| | Lieut. Col. G. Faithfull, Depy. Commissioner Tavoy..... ..... | Forwarding letter No. 9 A, dated 24th Jany. 1870. | 16th Feby. 1870. |
| | P. G. Paul Esq., in Medical Charge Tavoy... | Report dated 1st January. 1870. | 16th Feby. 1870. |
| | Captain. T. Shepherd, Depy. Commissioner Mergui..... | Forwarding letter No. 2 dated 18th January 1870. | 24th Jany. 1870. |
| | C. W. E. Foster Esq., Civil Surgeon Mergui. | Report dated 1st January 1870. | 24th Jany. 1870. |

Public Health Akyab. Visited twice during the year, Cholera having broken out in an epidemic form.

87 In 1868 no portion of the Arakan Division was visited. I had however in May and June of the year under review to visit Akyab, the chief town of that part of British Burma, twice on account of a severe outbreak of Cholera. Before describing the probable origin, course of the disease and the steps which were taken to mitigate and stay if possible the ravages of the epidemic, I purpose giving an account of the insanitary condition in which I found that station at my visit. All these points were fully detailed in my Special Report, dated 6th May 1869, but without a recapitulation of the same here, it would be impossible to understand the circum-

stances which led, in my belief, to the disease assuming the large proportions it did. The greater portion of that report therefore is embodied in the present one.

88. TOWN:—The town of Akyab has been well laid out. The principal streets as far as the configuration of the ground admits are wide and at right angles to each other, enclosing ample building allotments. In some circumscribed situations and apparently without a sufficient reason, the houses are crowded together and each dwelling is occupied by too large a number of persons. I particularly instanced that quarter close to the native bazaar; and that also West of the Cherrogeah creek. At the back of the town there is ample and high land for the healthful extension of house accommodation. In those quarters west of the Jullia-Khali creek, which intersects the town in this direction the blocks are traversed by narrow streets. Similar lanes are met with elsewhere, but to this portion of the town, as being the most densely populated, I desire to draw particular attention. Into these narrow streets every conceivable filth is permitted to accumulate; no houses face them and they are not used for traffic. It would therefore in my opinion, until a suitable system of sewerage has been planned, be better to allow householders, whose compounds abut on either side of these narrow ways to divide the land between them, provided that they keep the same clean. Of course I do not recommend that any of the land should be sold, on the contrary, the municipality should retain it in possession for future drainage purposes: and, with this in view no permanent structures should be allowed to be erected. I would merely suggest an interim occupation, because whereas at present it is nobody's business to keep the lanes in order, when divided as I have hinted, householders could be made responsible for the cleanliness of their respective portions. Besides in this manner reducing very materially the labours of the conservancy gangs, the closing of all such by-ways throughout the town, would also modify the night duties of the municipal police.

Town of Aykab, it's overcrowding, the proposition for lessening this.

89. New houses erected by squatters should be built at least 8 feet apart from each other, to admit of free ventilation and efficient drainage: moreover, the centers of the blocks should be kept free of buildings. No sys-

Houses should be erected 8 feet apart from each other, the centre of each block being kept free of buildings. Local rules much needed.

tem is at present followed in Akyab in the management of squatters allotments. Local rules similar to those in force in other parts of British Burma, should be framed for the purpose of preventing overcrowding and the regulating of sanitation in such quarters. To effect any real good in the Cherrogeah division, it would be necessary to clear the land first. The Magistrate must watch the opportunity to thin out and drain as huts become vacant. For instance the cattle which I found stalled hereabouts is a breach of town rules, and therefore when the animals have been removed to the rural localities, the land occupied by their sheds can be cleared, levelled and drained.

Huts, privies, tanks and wells huddled together. Insanitary condition of the quarter generally.

90. To describe accurately the miserable squalid state of this quarter would be an impossibility. The huts, sheds, outhouses, privies, tanks and wells are huddled together, the greater portion being contiguous to each other. It is overcrowded, swampy, filthy, and where once a drain did exist, it is now filled up with every description of nastiness.

Good houses exist and others are being erected.

91. There are some good substantial houses in the town chiefly built of wood and others are in course of erection.

Principal Roads good; smaller thoroughfares in bad repair.

92. ROADS:—The principal roads and streets are wide, well metalled, kept in order and clean enough. The smaller thoroughfares however are uneven, full of ruts, lodge water, unmetalled and would appear to be entirely neglected. I noticed one road leading to the beach near the bazaar of recent construction. The drains were not completed but the work was progressing satisfactorily.

The necessity of metalled roads in a sanitary point of view explained.

93. Well metalled roads in towns are equally as necessary in a sanitary as in a commercial point of view. In a town of the dimensions of Akyab situated as it is on the sea-shore, and only slightly raised above high water mark that the rain water should at once drain away is of the first importance. The hard impermiable metalled surface of roads facilitates this to an enormous extent, much more so than is supposed. The land taken up by the numerous thoroughfares in this town, I imagine equals at least one-third of the entire area occupied by buildings, and if all the roads were properly drained and well metalled the subsoil would be kept in a very much dryer and

healthier condition than it is at present. There can be no doubt that the soil of Akyab is sufficiently moist by virtue of its low lying position, and any works we can effect to reduce the quantity of water present is so much gained to the cause of health.

The consideration of the best plan of drainage for Akyab is now receiving the attention of the D. P. W.

94. DRAINAGE:—Now I come to perhaps the most difficult problem to solve in this station, viz., How is Akyab to be drained? I have not seen the levels, but Colonel Fraser, the Chief Engineer of British Burma, informs me that they have been taken, and that a new system of drainage is under consideration.

The old drains of Akyab still existing in some places are filled up with rubbish and vegetation.

95. The land marks which I see in every direction, indications of the labors of former sanitarians distinctly point out that strenuous efforts were once made to drain the town effectually. These old drains, some are still in good preservation, are deep, flagged at the bottom and revetted with hewn stone, others again, chiefly in the town are mere cuttings in the earth and have generally fallen into disrepair. They are filled up in many places and overgrown with vegetation.

Masonry drains are absolutely necessary.

96. As I have said, metalling not only preserves a road, allowing the rain water to run off it quickly, but it keeps the soil dry, so also is it necessary with a like object, to revet the side drains with permanent materials To attain therefore a result so desirable as a dry soil, all the drains must be built of sound masonry. When the fall per mile is so slight as it is in Akyab, this becomes doubly important. I therefore recommend that any scheme for the improved drainage of this town, may include in it this highly desirable requisite.

Creeks in the town deserve attention. Sluice gates recommended.

97. The creeks and swampy ground deserve the attention of the Engineer. In the middle of the town a creek is found, full of rank vegetation; this might be cleaned out, the sides sloped and revetted. Sluice gates might also be constructed to keep the tide out. Certainly in its present condition it must foster those diseases, so common in this station especially fevers.

Filthy condition of the banks of the creeks tend to induce disease of a serious type.

98. I do not mean to assert that this tidal creek alone produces that serious form of Remittent fever, once so prevalent, the

endemic character of which in by-gone days, made Akyab a dreaded place of residence for Europeans, for there are equally serious sources of malarious fevers to be met with ; but I do mean to say, that the present neglected condition of its banks, the rank vegetation and filth it contains, are highly injurious to health and doubtless add a large quota towards the development of such fevers.

Soil on which the town is built. It's site and drainage, the latter very defective.

99. Akyab standing upon a bed of sand, the substrata to which successively are clay and sandstone, occupies the north-west shore of the extensive harbour. The site of the town in some places rises gently from the river and the sea, and at others is but slightly raised above high water, extending in dead flat districts. For the principal part however, the surface rises above the Cherrogeah creek and harbour, which therefore have been regarded as the natural and proper channels for the drainage of the town, the main drains having been arranged to discharge their contents into them. It was evidently hoped that by this method the whole drainage of the town would be effectually and rapidly conveyed away to their final receivers. This condition however has not been fulfilled in its entirety, thus, generally throughout the town, refuse matters are collected in holes beneath and in the rear of houses and escape only, when those holes become filled and the surrounding soil permeated to super-saturation.

The tide enters many of the drains, hand labor required to clean them periodically.

100. Some quarters of the town have no drains of any description; the declivity in others is insufficient while many of them are constructed on a perfect level. Into many of the drains the tide water enters. This causes the contents to flow back into the town, and altho' on the return of the waters the cleansing of the drains is assisted, yet it becomes necessary periodically to employ hand labor to remove the accumulations of foul matters. This then is the actual state of the drainage of the town of Akyab.

Cost of keeping the present system in working order enormous. A more economical plan much needed.

101. The enormity of the labor required to keep the present system in good working order is far beyond the Municipal funds at the disposal of the Magistrate. A more economical plan which must be to a very considerable extent self-acting is absolutely necessary. Any system which at-

tempts to concentrate the drainage at a few points for the reasons already mentioned must be attended by great expense. The enlarged capacity of drains required to carry away the heavy rain fall at this station, amounting to over two hundred inches per annum, is a serious objection to such a plan.

Sanitary Commissioner's views on a proposed system of drainage for Akyab as far as regards the public health.

102. On the score of public health and economy, these points will have to be seriously considered. With the latter I have nothing to do. The Public Health to me is of the first importance, and having this constantly in mind, has induced me perhaps to extend these remarks to a greater length than need be. I fully comprehend the enormity of the task before the D. P. W., in the elaboration of a thorough system of drainage for Akyab, and I am only desirous to assist their endeavours in the execution of the difficult work before them by pointing out the sanitary objections to the old system. The outlets, the fall, sluice gates and matters of detail will receive due attention at the hands of the Engineer entrusted with the work. I only desire here to record the principles which seems to me alone will secure success and they are first, that the drains should be deep; secondly, that they should be of sufficient capacity; thirdly, that they should be revetted and floored with good sound masonry from end to end; fourthly, that sluice gates should be constructed to keep out tide water; and fifthly, that there should be several out falls. To all this I would add a caution. In order to drain the supersoil of this town so as to free it from the greatest amount of moisture, and to carry off as quickly as possible the storm and other waters, the system of drainage should be constructed so that it may not interfere with any sewerage operations hereafter to be undertaken.

Double system of drainage deemed impossible. Dry earth system impracticable.

103. It is the opinion of some Sanitary officers, Engineers, as well as Medical men, that the sewerage and drainage operations in all towns in the East, must be kept entirely distinct and worked separately and independently of each other (the former on the dry earth principle). I must confess that I am daily becoming more convinced of the difficulty, if not the impossibility of carrying out efficiently in our large towns, this double system for the want of funds if for no other reason.

104. WATER SUPPLY:—It is a religious custom among the people throughout British Burma, to dig public tanks and to sink wells. When a native has collected sufficient funds, to spend the money on such works is considered meritorious. In the Pegu Division it is seldom that such operations are conducted in towns. Suitable sites are generally selected near monasteries and other sacred spots, or at the sides of the public thoroughfares in the suburbs, in convenient and useful places: moreover, Officers of districts and Magistrates exercise a discretionary power in granting the land. This salutary supervision has been neglected in Akyab. Tanks of all sizes, from a few feet to many yards square are seen in vast numbers in and around the town. Wells of all sizes are doubly as numerous—almost every house possessing at least one. The majority of the wells have no parapet walls, the refuse water draining back again into them, and altogether a more unwholesome condition of things can hardly be imagined than that which surrounds them. In numerous instances I discovered privies within a few feet of such wells and tanks, the former frequently occupying a higher level than the latter. It is impossible to believe in the value of the water contained in these places. The people themselves appear skeptical on this point, and although they denied using it when questioned, for drinking purposes, I must say that knowing their habits* and seeing the constant drawing going on at these wells and tanks, the use to which the water is placed seemed to me suspicious.

Water supply—the custom of the people in providing themselves with water. The plan or system in Akyab—improper condition of the wells generally.

105. In one tank about 30 feet square I saw a Dohbie washing clothes, while another individual washed his rice in a basket and a third filled his chatties for domestic purpose. At another tank of similar dimensions I saw several persons drawing water and during the operation three others were washing their mouths after eating, and squirting the water back again into the tank. Had I taken the trouble to wait at each tank throughout the town, I might doubtless have witnessed equally disgusting and unwholesome proceedings.

The filthy practices of the Natives of India in regard to their use of the tank water.

106. The wells have fallen into disrepair. The parapet walls of those in public places and in private enclosures also, have been constructed so low that it is not an uncommon thing to see the

The wells have fallen into disrepair. Natives of India pollute the water.

* Natives of India not Burma. The inhabitants of Akyab are chiefly composed of Chittagonians. The Burmese never wash in, or otherwise pollute their tank water.

dirty Chittagonians squatting down on them and bathing their naked bodies in that position. The washings of one Chittagonian, one would think would be enough to contaminate the water of any well, but what must be the state of the water in those wells where a number of those people follow this practice.

107. Wells and tanks are fouled by other nasty habits. For instance the gharry-wallahs draw their water in the stable buckets. Again the Natives of Indiadip their brass lotas into them, the water being used to wash the person. Imagine the consequences of a native affected with Cholera dipping his soiled vessel into a public well. By this means the disease might be spread throughout the quarter in which the well water was used. I saw Natives of India drawing water in this fashion during my early visits to the "back slums" of the town, and I was struck with the indifference evinced by their fellow countrymen who were at the same time raising water for domestic use.

The possible spread of Cholera from soiled vessels being dipped into the wells. The Natives of India soil water.

108. To believe that the wells and tanks in this town are not contaminated directly or by percolation through the soil with excrementitious and other foul matters is impossible. As I have said, the privies in numerous instances—so numerous as to be the rule,—are in close proximity to the wells and tanks. In fact no system is followed, wells and tanks and privies are jumbled up together; the majority being in the most filthy condition, loading the air in their neighbourhood with noxious effluvia. The tanks are never cleaned out; they are not even fenced in; some contain old leaves; the thatch of old buildings, and rubbish of all kinds, while their banks are broken down and untidy. Cattle also can and do enter and drink the water when and where they like, and this too all in the town itself. Is it to be wondered at, that with such a polluted water supply the inhabitants of Akyab are periodically visited by outbreaks of Cholera and other serious diseases? I am only surprised that Cholera ever quits the place.

It is impossible to believe that the well and tank water of Akyab is not directly polluted by excrementitious matter.

109. All this must be improved, for good water is procurable in Akyab. I shall very likely be told, as I have been told elsewhere, that nothing can be done without money and that there is no money in Akyab to carry out town improvements at the disposal of the Magistrate, but I cannot accept this want of

Good water is to be procured in Akyab. Money is obtainable.

Municipal funds as a satisfactory excuse for doing nothing at all. To me and I feel confident that the Administration will agree with me, this line of argument when put forward by local officers is a direct evidence of the want of interest in the welfare of the people and towns placed under their charge. A direct acknowledgment that they do not exercise the power given to them as Magistrates, or use their influence and guide the vast resources which the people are ready to employ on useful public works, in the most advantageous directions. The custom inherent among the people of British Burma of constructing public tanks, wells, bunds, travellers rest houses and bridges &c., when they have the means, might be with judicious management, turned to good account: and, when this is not done, I cannot help thinking that local officers neglect a first duty. In many parts of the country, towns have become healthy under the fostering care of local officers. Sanitary changes have been effected of considerable magnitude, without force being employed, without interfering with the prejudices of the people and without money. My experience convinces me that when local officers shew the inhabitants of a place, that they really take an interest in their welfare, they invariably carry the people with them in all they wish to accomplish. The present Magistrate of Akyab cannot be blamed for the sanitary evils existing in the town. The defects which I have noticed are not the growth of a single day.

Good water is to be found in the laterite soil at the back of the town. Situation in which wells might be sunk pointed out.

110. I have said that good water is procurable in Akyab. It is to be found in the highland at the back of the town in the direction of the Chittagong road. Here laterite crops up, and in this description of soil good potable water is invariably met with. Suitable wells might be sunk also parallel to the town and at no great distance in its rear. In the town and its suburbs there are some good wells much frequented which might be repaired. Near the Cherrogeah creek I also discovered laterite. Here again good wells might be dug. But to remedy the present evils and to get rid of the possibility of contaminating the water in wells either by direct pollution or by percolation through the soil, I beg to suggest the driving of a large number of Norton's tube wells for the use of the town. All useful wells known to contain good water and situated at a distance from habitations should have their masonry re-constructed with

hydraulic cement. They should then be fitted with strong pumps and their mouths built over. All such wells must be provided with good substantial sloping platforms round their outlets and with circular drains to carry off waste water. When once these alterations and improvements have been completed all private wells in the town should be closed. I would suggest that no time be lost however in causing to be filled up all the filthy wells and tanks situated in overcrowded and unwholesome localities.

There are three public latrines in Akyab. One in a filthy condition, and two of recent construction and in cleanly state.

111. PUBLIC LATRINES:—There are three public latrines in the town of Akyab. Two have been recently reconstructed and are run out well over the tide in the harbour. They are conveniently situated and were clean. More are required especially for the women. At present the women and children use cesspools and I have no doubt the men frequent the same places whenever they can. When public latrines have been erected in sufficient numbers to meet the requirements of all classes no house-holder should be permitted to have a cesspool of any description on his lot. The third public latrine has been erected at the back of the town close to a swampy tidal creek. It is composed of mats, bamboos and jungle wood posts. The floor is formed of the same materials and raised about 4 feet from the ground. The principle is bad and the situation is worse. I have requested the Magistrate to remove this building as I found the floor saturated with urine and other filth. Inland public latrines must be conducted on the dry earth system and the poudrette must be carried away and buried or used for cultivation at a distance from the town, from all habitations and from all sources of water supply and fresh water creeks.

Cesspools common throughout the town. They are generally kept in bad order. The well and tank water is supposed to be polluted by them.

112. PRIVATE LATRINES:—Every dwelling in the town has its privy, either in the form of a cesspool, or the excreta simply falls on to the ground. Numbers of these places are to be seen in a neglected and filthy condition. They poison the atmosphere in their neighbourhood and saturate the soil and contaminate the wells and tanks, which as I have already mentioned are frequently separated from them only by a few feet. A thorough working system of sewers or the establishment of proper public latrines are the only works, I can suggest which are likely to prevent this excrementitious pol-

lution of the soil of the town. The new public latrines which are now in working order, and which I have reported as successful, I understand were not very expensive. I therefore recommend that the experiment be extended. Inland latrines however must be as I have already said constructed on the dry earth plan. They are expensive. The cost incurred in removing the poudrette to a distance from the town and their proper supervision, forming the heaviest items. Wells and cesspools are incompatible. If the former are to be permitted then the latter must be closed.

Average number of animals slaughtered in Akyab is large. There is no Slaughter house. One is much required.

113. SLAUGHTER HOUSES :—The average number of animals slaughtered in Akyab daily is large; and during the shipping season, the demand for fresh meat is more than doubled yet there is no Slaughter house attached to the town. In the interests of the Public Health alone, the want of such an important institution should not have been overlooked. Slaughter houses are not very expensive buildings in this country, and in all large towns they are so profitable, that to me the absence of one in Akyab is a mystery. I can quite believe that the income derivable from a good building of this nature, in Akyab, would go far towards covering the expenses incurred on account of the erection and working of the public latrines. I desire therefore that the necessary outlay for the erection of a Slaughter house may be sanctioned without delay.

Sanitary condition of Police Thannahs generally good. One only requires alterations.

114. POLICE THANNAHS :—The wooden floor of the puckah police Thannah next to the bazaar is too near the ground. I would suggest that the floor be removed altogether. The space should then be raised to the required height with earth and afterwards paved with bricks set on edge in asphalt, the whole being covered over with a thick layer of the same substance.

Old grave yard closed; the present space allotted for burial purposes is unlimited, and there are no rules in force.

115. GRAVE YARDS :—The old native grave yard which was too near to the town has been closed. The place now used for sepulchral purposes cannot be called a grave yard in the usual acceptation of the term. The people bury their dead where they like, in an extensive piece of high land to the rear of the town and Civil quarter. Some graves are made in and near the creek which separate this

quarter from the town, while others are dug away off again at a considerable distance. No limits have been defined, no order or arrangement is maintained, no supervision appears to be exercised and no rules have been laid down for the management of this native grave yard.

116. The regulating of our native grave yards efficiently has for sometime occupied my attention. That they should be fenced in and rules drawn up for their proper management and strict supervision becomes daily more apparent. The dismal and sickening sights, I witnessed during my inspection of the native grave yard at Akyab, shews distinctly, that the mere visits of a Conservancy officer and the appointment of chowkeedars are not much better than a make-shift, or to speak plainly, a mockery and a delusion. As things are, not only is the decent burial of the dead even impossible, but danger to the public health becomes hourly more dangerous.

The attention of the Sanitary Commissioner has been given to the framing of rules for the better management of grave yards.

117. I saw bones and the portions of the bodies of human beings, the bones of cattle, old mats, rags, soiled bedding and fragments of coffins lying scattered about on the ground in this grave yard. I was informed by a native chowkeedar that all this resulted from the resurrectionary proceedings of jackals and pariah dogs. If this is really the case then it is evident that the bodies are not buried deep enough to be out of the reach of these nasty brutes; and I can only conclude that, no one is responsible that the graves are dug of adequate depth. I addressed the Magistrate regarding the state of this grave yard, and I trust my recommendations for its improvement will be attended to.

Disgusting state in which the grave yards were found at the visit of the Sanitary Commissioner.

118. COURT HOUSES:—The Courts are held in the Custom House. They were clean and in good order.

Court houses clean.

119. TANKS:—I have already remarked on the tanks in the town of Akyab. I have also expressed my decided objection to such sources of water supply in towns in some of my already submitted Sanitary Inspection Reports. The reasons I advanced against them are doubly applicable to the majority of the sinks and filthy ponds, for I cannot call them tanks, met with in this town. I would suggest

Tanks are atmospherically polluted in towns, the filthy places called tanks so numerous in the town of Akyab should be filled up.

that all these unwholesome places be filled up. I do not now allude to the larger tanks in the suburbs and Civil lines. They however are not as cleanly kept as they should be. Their banks are broken down and none are fenced in, cattle resort to them and they are never cleaned out.

Cholera in the Gaol, Sanitary Commissioner's suggestions for sanitary improvements.

120. GAOL:—Several cases of Cholera having been admitted into the Hospital, Doctor Mountjoy, the Civil Surgeon, invited me to inspect the Gaol and suggest any improvements which I might consider it advisable to effect with a view to check the further spread of the disease. I most willingly complied with his request. The following is the condition in which I found this Institution. :—

(*a.*) The Gaol is capable of containing 258 prisoners. It had 409 confined within its walls. It was therefore overcrowded by 151 prisoners.

(*b.*) I discovered a puckah built bathing place attached to the parapet wall of the well from which the prisoners obtained their drinking water. This leaked the water finding its way back again into the well.

(*c.*) Five cases of Cholera had been admitted into the Hospital during the previous night from the "under trial ward." On ascertaining the cubic contents I found it capable of containing 15 prisoners only. There were 30 lodged in it. It was therefore overcrowded by 15 persons in number. The night privy was not as it should be, clean and free from smell.

(*d.*) The poudrette from the dry earth latrines is placed in the garden attached to the Gaol. Alongside this garden there is a small water course, and the water I was informed is used by the Police, whose barrack is situated close to its bank, they have suffered severely from Cholera, and likely enough by the prisoners also.

(*e.*) I found a tank in the Gaol compound in an unwholesome state. The husks of cocoanut were floating about the dirty looking water it contained.

With the exception of these points I found the conservancy of the Gaol, the drainage and the latrines in excellent order.

I suggested the following sanitary measures :—

(*a.*) That the Gaol well be closed.

(*b.*) That the bathing place attached to the parapet wall of this well be knocked down at once.

(*c.*) That the prisoners drinking and cooking water be obtained from a good well at some distance from the Gaol; that it be first boiled and then passed through filters of sand and charcoal before use.

(*d.*) That the Gaol poudrette be thrown into the sea or removed to a distance from the Prison.

(*e*). That the excess of prisoners be removed from the Gaol without loss of time.

(*f.*) That two sheds be erected on the grass plots in front of the Gaol but within the enclosure for their accommodation.

(*g.*) That a small Hospital should be erected for Cholera patients outside the Gaol altogether.

(*h.*) That carbolic acid should be used extensively in the night latrines and in and about the wards, but as there was none in hand that additional supplies should be telegraphed for.

(*i.*) That the "under trial" ward be deserted for a time and fumigated with wood smoke and sulphurous acid.

(*j.*) That the floors of all the wards be coal tarred to the extent of the sleeping places, as in the Rangoon Gaol Hospital. (I explained to Doctor Mountjoy the manner in which this is done.)

(*k.*)That the walls inside the wards be treated in the same manner to the height of three feet.

(*l.*) That the dead from Cholera be buried at once—the bodies being covered with fresh lime before the graves are closed.

(*m.*) That all soiled clothes of Cholera patients be burnt.

I further recommended that after a fair trial had been given to these sanitary measures, should Cholera still continue the Gaol be entirely vacated until the disease disappeared.

Sanitary Commissioner's suggestions attended to at once. Cholera at once ceased.

121. Doctor Mountjoy who I must mention has only recently received charge of the Gaol, lost no time in carrying out my recommendations. In fact he had the filters put up before the evening. As might have been expected Cholera ceased, no fresh cases occurred; and Doctor Donnelly, the Officiating Inspector General of Prisons, assures me that

the Gaol has continued healthy. This is a third instance in which sanitary measures have apparently, and it is reasonable to assume that they have effected some good--cut an outbreak of Cholera short—nipped it in the bud. *

Dispensary clean.

122. DISPENSARY:—I visited this Institution and found it in good order. I found it clean and well attended.

Government Bazaar in bad order.

123. GOVERNMENT BAZAAR:—This Bazaar was clean at the time of my visit. The drains are falling into disrepair. The north east drain lodges water. The puckah side sheds are old and dilapidated and deserted. They should be pulled down and useful stalls erected in their stead. This bazaar is not frequented as it might be.

Messrs Bulloch Brothers & Co's. bazaar requires drainage. Stalls badly constructed.

124. MESSRS. BULLOCH BROTHERS & Co's. BAZAAR:—This bazaar is contiguous to the Government one. It was well stocked and well attended. It was clean, but I was surprised to find, considering the time this bazaar has been in existence, that it is not drained. A water supply even has not been provided. The stalls are constructed of temporary materials and being but slightly raised from the ground admit filthy accumulations beneath them. There are no properly constructed meat or fish stalls in any of the bazaars of this station. Such stalls must be built of stone or bricks, covered with tiles set in cement, on an incline, provided with drainage and an ample water supply. I noticed some old fish stalls in the Government bazaar; but they have fallen into disrepair and were not in use. Stalls of every description in our bazaars must be constructed in a solid form to prevent the occupiers from accumulating filth underneath the same.

Piggery in the heart of the town. Sheep, goats and other animals, are slaughtered in the town for the want of shambles.

125. PIGGERY:—I discovered a Piggery in the heart of the town and was informed by a Chinaman that at least seven of these animals are killed daily. The want

* There was no Cholera in the town at this time—Vide Dr. Mountjoy's letter No. 301, dated Akyab 6th June 1869, to Commissioner, paragraphs Nos. 1, 2, 3, 4—"It is with much regret I beg to report for your "information that during last night 7 fresh cases of Cholera were brought into the Gaol Hospital. Four "Cholera patients also died during the night. This is a very lamentable state of affairs; the Cholera "was never so severe in the Gaol as it now is; there is no Cholera in the town." Cholera consequently appeared in the town a second time, but the Gaol on this occasion remained free and has ever since continued free from the disease.

of a good Slaughter house without the town limits is much felt and here is an instance pointing out that such an institution should be erected without delay; sheep, goats and other animals are despatched and dressed in the town, and I hope this unwholesome practice will be prohibited in future.

Cattle stalled in the town.

126. STALLING CATTLE IN THE TOWN:—I noticed sheds for stalling cattle in several directions in this town. I trust no time will be lost in ordering the removal of all cattle from the town limits.

Cherrogeah Creek. Condition of the Merchants godowns and coolie quarters. Water supply bad.

127. CHERROGEAH CREEK:—This creek bounds the town on the North-West. Where it enters the harbour and for some distance up its course the banks are lined with Rice godowns. I visited several and was most agreeably surprised to find the majority clean and in nice order. The slopes of the banks of this creek on either side to below low water mark as far as the godowns extend, are revetted with stone and the whole of this property, which is exclusively owned by private persons, bears the appearance of having received very great care and attention. The outhouses and cooly quarters, however, were not so neat and clean as they might be; again, I would direct the attention of their proprietors to the water supply.

Mr Robertson's mill and property inspected and found in as cleanly a condition as could be expected.

128 I inspected the whole of Mr. Robertson's property including the mill, and I am bound to say, that I found all in as satisfactory a condition as could be expected. In former years rice came to this market cleaned or partly husked and ready for shipment. Since the completion of the mill, the cultivators have been induced to bring in large supplies of paddy that the mill may be kept fully employed. Thus whereas formerly very little paddy husk was seen in this creek, now of course it is thrown out from the mill in vast quantities; and as the broken rice and bran are not separated from the husk, the most noisome stench is created by their fermentation &c., at low water. Mr. Robertson informed me that broken rice and bran are valuable, and that he anticipates a ready and profitable sale for them in Akyab. The necessary machinery to affect their separation is shortly to be put up, when this nuisance will be almost wholly obviated.

The practice of obtaining drinking water from the Cherrogeah creek for the shipping is objectionable.

129. The Cherrogeah creek which is only some 80 yards wide at the mill, narrows very considerably as you ascend it, and during the last of the ebb tide, at about three miles from its mouth, the water is fresh and is used extensively by the people. Here I saw water boats which are employed by the shipping, and I was informed that in this position the supplies are obtained. Now as the Akyab side of the creek is lined with squatters houses, and as the banks are dotted still higher up its course with villages, foul matters find their way into its waters. The drainage as in the Cherrogeah quarter of the town being directed into its channel.

Water is obtained by the shipping from the river and tanks in Akyab.

130. In the dry weather when but little fresh water descends the creek, I believe the water boats are filled at a much greater distance up the stream. In the rains of course this is not necessary, and in the latter season few or no ships visit Akyab. It is to the state of the water contained in this creek in the dry weather that I am anxious to draw attention, when of necessity it is fouled to a large extent, and increased in foulness, by the sluggishness of its flow and by each return of the tide. This water is pumped into the boats and pumped out again into the ships tanks, without any attempt being made to purify it in transit from the one to the other. The Captains of ships clear the water with alum, but as this simple process is not always thought of until it has been some time on board, —and it is not the custom to take in fresh supplies until actually required for use—the water is largely used by the crew and much sickness results. Should Cholera be present in the villages up the creek, its sudden appearance among the sailors whose water has been obtained in the manner described, is the first indication of the disease in Akyab, and everyone wonders where it has come from. It must not be understood that ships receive their fresh water from this one source alone. Water boats collect it from the river about two days journey north of the harbour, and precisely in the same manner, and under similar disadvantageous conditions as in the Cherrogeah creek. Again some Captains purchase water from the owners of tanks in Akyab itself.

Filtering apparatus should be fitted to the Akyab water boats as in Calcutta.

131. I believe it is the duty of a paternal Government and of those directly concerned in the rice trade, to ensure to the crews

of the numerous ships visiting the harbour in their interests an ample and wholesome supply of good potable water. In Calcutta, I understand each water boat is provided with a filtering apparatus. Why cannot a like humane plan be insisted upon in this port ?

Sanitary Commissioner's recommendations for an improved water supply for the shipping.

132. I would suggest to remedy all this, the formation of large tanks and the sinking of iron cylindrical wells, in convenient and healthy positions, exclusively for the use of the shipping. Such tanks and wells must be properly constructed with suitable reservoirs for mechanically cleansing the water by subsidence and filtration. The quantity of water must be determined by reference to the number of vessels which annually enter the port. The economical construction and cheap working of these reservoirs, as well as the immediate necessity for some such scheme, are of extreme importance and I am confident that a system based on these principles would prove a great success. I believe the water might be sold at very moderate rates per ton—at rates so reasonable that no one could complain, and the receipts while at the same time amply covering all working expenses, would still yield a handsome return on the outlay to the municipality.

The effect of ensuring to Sailors good potable water would be inestimable.

133. One thing is certain that by ensuring to sailors good potable water—an inestimable blessing in itself—the risk they now run of contracting serious sickness by the inbibition of Cholera and other poisons in the Akyab water would cease to cause us further anxiety, and the chances of maintaining them in health in this foreign land would be greatly enhanced. The foul, turbid and dangerous liquid supplied by the water boats at very high prices would become an impossibility,—a thing of the past. The incalculable good then which we must acknowledge it is in our power to effect, ought to stimulate us to lose no time in its accomplishment.

Paddy husk. The largest quantity at present is thrown into the creek from Mr. Robertson's mill.

134. PADDY HUSK :—The largest amount of Paddy husk is thrown into the Cherrogeah creek from Mr. Robertson's mill, and for the reasons already mentioned in para. 128. But who can say, how long this will be the case. The erection of additional mills may be in contemplation. Besides if the merchants find it cheaper to purchase paddy and clean it at their godowns, instead of buying rice, they are sure to do

so, and then the disposal of the husk will undoubtedly become a most serious difficulty. To throw it into the creek would be highly objectionable, even dangerous to the public health.

Paddy husk. The nuisance arising from casting this substance into the creek has been made the subject of a reference to the Chief Commissioner.

135. The nuisance attending the casting of paddy husk from Mr. Robertson's mill into this creek, has lately been made a subject of reference by the merchants of Akyab, to this Administration. I assume that this representation was made honestly and in all fairness. A grievance is not a grievance till it is felt, and of course as paddy was not cleaned in any large quantities, before a nuisance was not really felt, until the prolific outturn of husk from the mill came to be disposed of. Yet we must not overlook the fact, that the very people who complain of the smell from decomposing paddy husk in Akyab, are the same who have subjected us to much long suffering, which has been borne with a patience perfectly christian, both in Rangoon and Bassein where the paddy husk from all the mills and winnowing machines—a quantity some hundreds of times greater than that which leaves Mr. Robertson's mill,—is thrown into the Rangoon, Poozoondoung and Bassein rivers. The sickening smells which arise, from the decomposition of the husk in Akyab, is not so much due to the husk as to the broken rice and bran it contains. If Mr. Robertson will only set up machinery for their effective separation quickly, he will lessen the harm of depositing the husk in the creek, and remove one serious cause of complaint. But apart from this, that which is considered a duty on the part of the one, to effect any real good, must be made applicable to all alike. I beg to recommend therefore, that every merchant in Akyab, whose operations in paddy cleaning are conducted on this or any other creek be prohibited from depositing any husk in the creek at all. I noticed that besides Mr. Robertson there were other delinquents in this respect.

How is the husk to be disposed of if it is no longer to be thrown into the creek.

136. The question now comes what is to be done with the husk if it is no longer to be thrown into the Cherrogeah. It would be gratifying to learn that the natural waters of this creek, might be left uninjured by the refuse of rice mills, and rice godowns. It is much to be regretted that no practical method of utilizing the husk as fuel, to feed the very steam engines which separate it from the grain, has as yet been suggested, and if this is not likely to be attained I

can only recommend that the husk be carried in carts or in trucks on a small tramway, to some vacant piece of land and there burnt. This practice is followed in Maulmain. All other schemes, such as burying and so forth have their weak points and are simply impossible.

In Poozoondoung, Rangoon and Bassein, the same evils are experienced as in Akyab from the paddy husk and waste from the rice mills being thrown into the water. Whatever rules therefore are necessary for Akyab, are equally required elsewhere.

137. The Poozoondoung, Rangoon and Bassein rivers are polluted in the same way as the Cherrogeah. When the worst comes to worst things are said to mend. The evils resulting from casting paddy husk into the Poozoondoung river are very serious, and if its waters and banks are still to be permitted to be fouled, I would ask whether something safer and more decisive may not soon be imperative in this part of British Burma as well as in Akyab. Like evils require like remedies. That the people of this quarter of Rangoon, suffer severely from the evil effects arising from the large masses of decomposing vegetable matter lying on the banks of the river no one can doubt. Hardly a ship enters it without serious cases of Fever, Diarrhœa, and even Cholera appearing among the crew.

Gaol poudrette. How it should be disposed of. The danger of depositing it in the Gaol Garden.

138. GAOL POUDRETTE:—The poudrette from the Gaol is placed in the Garden daily. Now as there is a water course on one side of this garden on the borders of which the Gaol Police barrack stands, I was not surprised to learn that several cases of Cholera had occurred among the men. I heard that the Police use the water and I have no doubt that the Prisoners do also. During the heavy rains at this station, I concluded that it would be as well to discontinue a practice, which if it had not already proved mischievous was likely to do so at no distant date. I therefore desired that the Gaol poudrette might be thrown into the sea, or removed to some distance from the station. This was approved of and immediately attended to by Dr. Mountjoy, the Civil Surgeon.

Jungle in the town. The prisoners might be profitably employed in collecting and splitting up dead timber.

139. JUNGLE IN THE TOWN:—The back lanes, drains and private lots in the town are overgrown with jungle, the trunks of trees also were lying about in all directions. It is true that the late Cyclone committed frightful havoc among the beautiful trees in this station, and I can fully believe that the local authorities have not been able to cope with the

work before them in the removal of all the wreck for the want of labour and sufficient funds. I however drew the present Magistrate's attention to the matter, and I hope steps will be taken to do something. The wood is valuable and the prisoners might be very profitably employed in collecting and splitting it up for rails and firewood.

Prostitutes quarters. The women chiefly Natives of India. The quarter tolerably clean.

140. PROSTITUTES QUARTERS.—The prostitutes all live in one part of the town. The quarter occupied by them is situated close to the Civil lines. The majority of the women are immigrants from India. I found the quarter considering the class of people who live in it tolerably tidy. Until the 'Contagious Diseases Act' is extended to Akyab, I would suggest as an impediment to the spread of venereal diseases, that all professed prostitutes be forced to live in the most distant and inaccessible part of the town. I would make no roads to the locality, but oblige all seeking these people to trudge through the mud to get at them, in fact, I would place every conceivable obstacle in the way of easy communication while I would on the other hand regulate the sanitary police of the place itself with the most rigid supervision.

Unsatisfactory state of the practice of vaccination.

141. VACCINATION:—On inquiry, I found that the practice of vaccination, during the past year in Akyab, had been as unsatisfactorily carried on as in other parts of British Burma.

Dead house much required.

142. DEAD HOUSES:—The provision of public mortuaries in our large towns is a subject which should not be neglected. A dead house similar to that which I had erected in the Rangoon Central Prison is much required in this station, where bodies are brought almost daily to the Civil Surgeon for examination. Rangoon has been provided with such a building. But in one of our principal inland towns, I saw the body of a murdered Chinamen placed in the bath room of the Civil Hospital, there being no other available place in which to hold a post mortem.

Civil Station. Its original site.

143. CIVIL STATION:—I have not yet mentioned a word in regard to the Civil Station of Akyab, but I have something to say about it, and here again what I have to say, is worthy of notice, because it indicates the spirit in which the officers of the

Commission approached that great difficulty of dealing with a new and a naturally sickly and unpromising locality, and converted it into a healthful place of residence for Europeans, replete with all sanitary requirements. A more dreary prospect than this site presented when selected as the future station of Akyab, it would be difficult to conceive. Nobody can look around here and fail to perceive this. Time has not operated as a bar to successful inquiry were inquiry necessary. The eye alone is sufficient to reveal to any person of ordinary intelligence the reasons for the works he witnesses on every side, and from these to consider what the condition of the land must have been in its original wild state would require no great stretch of the imagination.

Position of the Civil Station. Originally laid out by prison labor. The vastness of the work performed.

144. The Civil Station of Akyab occupies that portion of land lying between the town and the sea coast. The site is of considerable extent, and but slightly raised above high water. It may be described as a huge sand bank with a sub-stratum of sandstone, which here and there crops up to the surface and is evidently water worn. Originally it was destitute of trees, swampy in its greater part and inundated to a considerable extent by the sea. The swamps have been filled up ; deep and excellent drains made, many revetted with hewn stone ; good substantial bridges and culverts built ; bunds formed with sluice gates ; well raised metalled roads ; tanks and wells dug ; and beautiful fruit and evergreen trees planted systematically, and in such numbers that it would be a difficult task to count them. It may be truthfully said, that the most dreary and sickly spot has been converted into one of the healthiest of our stations in the East. The sanitary improvements at this station were, I understand, entirely performed by convict labor under the immediate and intelligent supervision of the officers of the Arakan Commission. The works too have been constructed so permanently and with such judgment, that many years of down right neglect only, can destroy their usefulness. Latterly it has been attempted with a view to improve the discipline of our prisoners, to employ them on intramural labour only in Akyab, but this must prove a failure, as far as profitable employment is concerned ; and depriving the station of their aid, its sanitary condition must retrograde, and for the following reasons. First, it is impossible to find remunerative indoor work for so many prisoners,* and

* There is no market for their productions.

secondly as regards the station, free labour is not to be had in Akyab, to carry out the simplest repairs required to existing works without an expenditure altogether disproportionate to the income derived from local taxes. This must always be the case, for the reason that Akyab has been laid out on a vast scale.

The system of sanitary works adopted in the Civil Station was extended to the town.

145 The foundations for the continued prosperity of the Civil Station as originally planned and carried out, were extended to the town also, but what the lapse of time and neglect have done to destroy these works in the latter, will be gathered from the body of this report. That ruin in like manner has not followed the good accomplished in the Civil lines, is chiefly due to individual efforts on the part of the residents themselves, and to the fact that there is no overcrowding or unusual traffic. I have but little to say regarding the present condition of the Civil Station most fortunately. I would however desire to draw attention to the condition of Dr. Morton's bund ; the sluice gates of which have been inadvertently, no doubt, permitted to fall into disrepair ; to the water supply ---the parapet walls of the wells being too low—(they should be treated in the same manner as I have recommended for the town)—to overcrowding of houses in the clerks lines; to the state of the tanks which are unfenced and never cleaned out ; to the jungle seen in the narrow lane opposite the Gaol, and to the practice of depositing heaps of filth and sweepings alongside the Gaol garden. I would also suggest that the creeks in this station deserve attention. They might at their mouths be revetted and the hollows filled up.

146. PUBLIC HEALTH:—The fixed population of Akyab is set down at 15,743. The deaths in 1868, amounted to 547, and the births to 721, or 34·7 and 45·7 per 1000 respectively.

Public Health. Outbreak of Epidemic Cholera.

The year 1868 was considered a healthy one, no epidemic or unusual sickness of any kind having occurred. Since however a serious outbreak of Cholera has visited the station and caused a large mortality. It is of this disease, its probable causes and possible prevention in future, I desire now to speak.

147. On the 13th November 1868, a severe Cyclone swept over Akyab and extended inland in a North-Easterly direction.

The effects of the Cyclone of the 13th November 1868.

The damage done to public and private property was very considerable.

In the Town and Civil station, scarcely a house was left standing and a great many trees were broken and numbers uprooted. In addition to this, the sea in the harbour rose inundating the land, irretrievably destroying the stores of grain and entering many of the wells and tanks. Throughout the track of the storm in the district also, much mischief resulted. The rice crop and the paddy already collected for the market were seriously injured. The latter wetted by the heavy rain and sea water past all possibility of drying it, both in the district and in Akyab itself, could not be removed before fermentation took place; when the stench thus created became unbearable. Colonel Stevenson the Commissioner of Arakan, in his report on the Cyclone did not anticipate any scarcity, and there has been none. I feared however, that, the depression (resulting from this terrible destruction of property and exposure) the people suffered would induce disease and my fears have unfortunately been realized. We have ample evidence of epidemics following in the footsteps of severe calamities such as this one, and although I am far from believing that the Cyclone caused the subsequent outbreak of Cholera in this Division of British Burma, I fully believe that it paved the way for the easy extension of the disease.

148. It is necessary to say a few words here on the position of Arakan, to faciliate my description of the probable manner in which Cholera entered it. This Division is somewhat triangular in shape, being bounded on the North by the district of Chittagong, on the East by the Yomah range of the Arakan mountains, which separate it from Burma Proper and the Pegu Division in its entire extent, and by the sea-coast on the West, the apex of the triangle being formed by the convergence of the hills and coast line to the South. The means of communication with this district are by land and by sea. On the North there is a Government road to Chittagong besides several passes through the hills. On the East besides the Pegu and Arakan road there are two passes through the Yomah mountains, one to the North through Burma Proper and the other one enters our own territory North-West of Thayetmyo. To the South there is a jungle track to Bassein which follows the sea-coast. By sea constant communication is kept up with Chittagong, Calcutta, and Rangoon by the B. I. S. N. Co.'s Steamers, and in the dry weather by native vessels also.

Position of Arakan and means of communication

The means of communication with Arakan by land; continued intercourse takes place.

149. I have said that continued intercourse takes place between the Arakan Division and Chittagong and for the following reasons. Owing to the sparseness of the population in Arakan and to the fact that the people are wealthy, the land is cultivated by Natives of India. The merchants are also dependent upon foreign labor to load their ships, the Mughs being far too well off to hire themselves out as coolies. Thus a large influx and efflux of Chittagong coolies is continually going on. During harvesting however, and the shipping season which commences in January, the laboring classes from the Northern Province swarm down the Government road, through the passes in the hills and by steamer, scattering themselves in every direction and moving from place to place as their services are required; vast numbers settling in Akyab. The traffic carried on between Burma Proper and this Division is conducted on the other hand by Burmans and Shans, but in small parties. Still communication in this direction is constant.

Freedom enjoyed by Natives of India in their movements, they even avoid being taxed.

150. For many years now the labor markets of Arakan and especially Akyab have offered great attractions to the persevering and thrifty Natives of India. The wages are high and they enjoy freedom. They come and they go how and when they please. No one interferes with them and as Colonel Stevenson remarks in his letter No. 148, to the Chief Commissioner, para. 25, they even avoid being taxed. No sanitary supervision is exercised or arrangements made to regulate their movements. The steamer on her passage between Akyab and Chittagong is frequently overcrowded.

The usual numbers of coolies visited Arakan in the year.

151. The usual number of coolies entered the district this year. There has been no unusual immigration.

Condition of the town of Akyab after the epidemic outbreak of Cholera is above described.

152. I have already described the sanitary condition of Akyab, I have done so it must be borne in mind not as it was before the outbreak of Cholera, but as I found it afterwards.* The state of the town therefore at the time of the epidemic can be readily conceived.

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153. The meteorological phenomena of Akyab are most imperfectly known. The Civil Surgeon not having the necessary instruments, no regular record is kept.

Meteorological phenomena imperfectly known.

154. The health of Akyab at the time of the outbreak was good and had been so for some time. The following I have extracted from Doctor Mountjoy's Report. "There has not been any extraordinary meteorological phenomena in 1869, and it is to be hoped that many years will pass away without a repetition of the Cyclone such as swept over the town and part of the district in November 1868."

Health of Akyab at the time of the outbreak of Cholera good.

"The average temperature has been as follows:—

| | | | | |
|---|---|---|---|---|
| January | and | February | 64° | Farh. |
| March | „ | April | 83° | „ |
| May | „ | June | 82° | „ |
| July | „ | August | 82° | „ |
| September | „ | October | 80° | „ |
| November | „ | December | 70° | „ |

| | RAINFALL. | |
|---|---|---|
| | Inches. | Tenths. |
| January... ... ... | 0 | 0 |
| February ... ... | 0 | ½ |
| March ... ... ... | 0 | 0 |
| April ... ... ... | 2 | 0 |
| May ... ... ... | 4 | 7 |
| June ... ... ... | 51 | 1 |
| July ... ... ... | 55 | 4 |
| August ... ... ... | 37 | 3 |
| September ... ... | 27 | ½ |
| October... ... ... | 5 | 4 |
| November ... ... | 0 | 0 |
| December ... ... | 0 | 0 |
| Total... | 183 | 7 |

155. The first case of Cholera in the town was noted on the 1st January. "Three others occurred in the month; during the first three weeks in February, there were but two cases; on the 22nd there were three, and from that date up to the 30th April daily deaths from the disease were reported. The maximum was

First case of Cholera occurred 1st of January 1868.

reached on the 29th of March, when nineteen persons died." It now gradually decreased in severity and had almost entirely disappeared on the 15th of May. The Magistrate registered up to this date 519 deaths from Cholera, but believes that "a much larger number than this really died," and he estimates that number at about 700.

Discrepancy in the several Magistrates figures. The returns of the registered (?) mortality very incorrect.

156. Here there is a decided discrepancy in the returns forwarded by the several Magistrates who relieved each other about this time. There is also a considerable difference between the dates given of the first case by the several reporting officers. Mr. Lloyd states, that he registered 519 deaths from Cholera in the first outbreak. In the second Captain Prendergast registered 29 or a total in the two visitations of 548.* Now Captain Prendergast records in his Annual registration returns a total deaths from Cholera of only 287 : Again, Mr. Lloyd states that the first fatal case of Cholera which took place in the town of Akyab occurred on the 1st January. Captain Prendergast sets down the date as the 2nd of January, while Doctor Mountjoy in his Annual Report says; "The first case of Cholera occurred on the 26th February in the town." The actual number of deaths recorded was 570.

First cases escaped notice All officers differ as to the date of outbreak.

157. It is evident from this that the first several cases were not observed. That the disease did not originate in Akyab is distinctly shewn in the Deputy Commissioner's report. He says : "I was out in the district in January, and first became aware of its appearance when in the Kullapanzin circle on the 13th January, the villages then were beginning (about the Kyon-Pa creek above the Poungdabreng Grant) to adopt the usual precautions on the appearance of this epidemic *viz*: to taboo their villages and prevent all entering or leaving." Again he continues: "I found the disease spreading and the villages further South were tabooing themselves, but at this time it was mild in its form and few attacked." Further he remarks: "I proceeded then to 'Old Arakan' seeing no signs of it on my way, but when there I heard it had made its appearance." Doctor Mountjoy, the Civil Surgeon confirms this but goes further. He states that "in the month of December 1868 a few cases of Cholera appeared in the villages near the

* I have called the two outbreaks "two visitations" to mark the interval or cessation of the disease which took place Of course they were in reality one and the same epidemic

eastern outlets of the Nga-Kiendah and Ally-Kyoung passes." He adds, "by these passes through the Myo Hills, the coolies from Chittagong in great numbers found their way into Arakan. I can easily imagine that Cholera breaking out amongst these coolies whilst journeying towards, or travelling or living in Arakan, although these very people probably remain free from liability to Cholera when residing in their own villages and surrounded by their families in the Chittagong district. In the two places their condition of existence differs materially. In Arakan though the laborers receive high wages, they reduce their food to bare subsistence point and live in the most objectionable way. Thus they lay themselves open to the first approaches of the pestilence." Here we have evidence of the presence of the disease in the Arakan Division as far back as December 1868.

Cholera in Mandalay in August 1868.

158. In July 1868 Cholera was raging in Mandalay the capital of Burma Proper. I was aware of this, but in no way felt any anxiety lest the disease should be extended in a Southerly direction during the rains. On the 8th August 1868, the disease appeared in the Toungoo Gaol. Here however, before it could spread to the town, it was checked by sanitary measures, the particulars of which are given in my report on the subject, dated Toungoo, 22nd September 1868. While at this station, I learned that Cholera had extended from Burma Proper down the range of the Karen Hills to the East. On reaching Shwè-gyeen on the 18th October, I made close inquiries, but nothing had been heard of the disease in that part of the Sittoung valley. At Sittoung itself the same immunity from Cholera was reported to me by the Assistant Commissioner. The Karens in this District were free from any unusual sickness. I now proceeded to the southern extremity of these hills near the town of Beeling but here also I found the health of the inhabitants good.

Cholera at Hpagat on the Salween in December 1868.

159. On the 4th December, I left for Maulmain arriving there on the following morning. I now heard that Cholera had visited a large village called Hpagat, situated near a break in the range of limestone hills which extend from West to East, on the banks of the Salween. I left at once for this part of the District and first met the disease at Tooyne, 6 miles south of Hpagat. The particulars of this journey and

the excellent results which attended the sanitary steps, I set on foot to check the disease, are given in my Maulmain Sanitary Inspection report, and I only now allude to the subject to show that Cholera was present in other parts of British Burma besides Arakan in the month of December 1868.

Cholera at Prome and Tsanyuay on the Irrawaddy in 1868.

160. In the months of Novr. Decr. 1868, and Jany. 1869, a few cases were also noticed in Prome, and again Lieut. St. John, reported that Cholera had shown itself in the village of Tsanyuay in the southern part of the valley of the Irrawaddy. He traced the disease to the foot of the Yomah Hills which separate this valley from that of the Sittoung. He also reported the disease in the valley, or rather as having followed the course of the Hlyne river, which runs parallel with the Irrawaddy and takes its origin near Prome. Several cases were also witnessed in the month of December 1868, in Nyoungdoon and Rangoon.

Cholera supposed to have entered British Burma at end of the S. W. Monsoon of 1868 via the valleys and hill ranges.

161 Thus the epidemic outbreak at Mandalay would appear to have been extended down the valleys and the several ranges of hills in British Burma during the latter months of the S. W. Monsoon and commencement of the cold weather. Nowhere however did the disease prove serious or show a tendency to become localized in a malignant form. Now looking at the general Cholera Poison spread so widely over the country, I am inclined to think that the disease was carried into Arakan through the passes from Burma Proper or down the Arakan hills from the direction of Munipore, from whence the Burmese declare their outbreaks of this pestilence invariably come, and that it was present among the inhabitants previously to the Chittagong coolies making their way down to the rice markets in vast numbers. That the Chittagong coolies developed the Cholera "contagium" into an epidemic form and then disseminated the disease far and wide I am quite prepared to admit.

Cholera seen in various parts of the Province considered one and the same epidemic.

162. I felt so confident that the late epidemic was part of the same disease which I witnessed in other directions in Burma and not of local origin that I called for further information; that which had already been furnished to me being too vague and unreliable. I fear the time has

* At this time from all reports there was no Cholera in Chittagong.

passed however to collect reliable data now. Doctor Mountjoy and the Magistrate of Akyab have done their utmost to assist me, but the question remains as it was, an open one.

The disease accompanied the coolies in their travels south.

163. The disease spread from village to village in a southerly direction, following the coolies in their travels. This of course refers to the movements of these people in British Burma. The authorities were not aware of its epidemic character until it had been spread throughout the filthy town of Akyab. I do not believe that the disease was imported from Chittagong, because had it been so introduced we should have heard of cases occurring on board the little steamer "*Maulmain*," which regularly plies between these two sea-port towns carrying multitudes of coolies,* yet not a single individual was attacked while proceeding in her. The Cholera "contagium" whatever that is, was present in the country and only awaited favorable circumstances to be developed from the mild into the epidemic form. The habits of the Chittagong coolies are just such as would do this, and when large numbers of these people are associated together undergoing great fatigue and privations in a foreign climate, they become a very easy prey to the disease, and carrying it with them prove a source of great danger to the inhabitants of any district through which they may pass. This I imagine is the true explanation of the introduction of the disease into Arakan.

At first the Mughs seemed proof against Cholera, but afterwards died as rapidly as the natives of India.

164. Colonel Stevenson remarks that the Mughs were not attacked for sometime. They seemed at first to be proof against the disease but afterwards fell victims to it and when it was once among them, they died as rapidly as the Natives of India. I account for this in the following way. The idiosyncracy and habits of the Natives of India and the Burmese are totally different. The Burmese dig tanks for instance and drink the water; they never bath or wash their clothes in them. On the other hand the Natives of India, whenever they can, do so and pollute the water; they even defecate close by and then wash their persons in the tanks.

Now it will be easily seen, how the Mughs (a race allied to the Burmese) escaped the disease for a time and then became amenable to it, from this fact alone. They probably escaped

* As many as five and six hundred at a time.

until their water supplies were actually impregnated with Cholera "contagium" whatever that may be. It is no new thing to observe that people of different races, different idiosyncracies, inhabiting the same locality, are effected differently by prevailing diseases. An epidemic may continue for a length of time and only attack one class of the inhabitants of a place. Much of this is accounted for by race, food, habits, and idiosyncracy it is true, but still independently of all this, there is much which is unaccountable and impossible to unravel.

Cholera can always be traced in British Burma to importation. It is never of spontaneous generation.

165. During the whole course of my experience in Burma extending over a period of nearly 16 years, I have never known Cholera to develope itself in any one locality. It can invariably be traced as an importation. The Burmese are well aware of this and they declare that they never knew the disease until foreigners came to the country.* In Upper Burma the disease is nearly always introduced from Muhipore down the Kindwen river, a large tributary of the Irrawaddy, which enters the main river some fifty miles below Mandalay. From thence it spreads along the main lines of traffic far and wide throughout the country.

Reasons for believing that Cholera was spread by contaminated water in Akyab.

166. That the disease spread by the contamination of the water supply in Akyab, I think I can shew that there is considerable reason for this being accepted as highly probable. I have already shewn how the tanks and wells in the town were polluted and how possible it was to spread Cholera by this medium. A Native of India is attacked with Cholera, he first of all pollutes the well by dipping his soiled brass lotah into it or he washes his person in a tank. In a town therefore where these dirty people live, Cholera may be spread from one person to a whole community. I have also described the uses to which the water of the Cherrogeah creek is put. For many miles it is drunk by the people and as Cholera appeared in the villages lining its banks previous to the outbreak in Akyab, the Cholera poison was more than probably conveyed by this means to the town as well as by the coolies. I have strong reasons for believing that the disease was largely propagated by the drinking water. That it can also be spread by the atmosphere I do not mean to dispute, but my observations shew me that the disease never travels as fast as the wind. It would appear to move

* The same thing is said of Syphilis.

from place to place just as rapidly as a river flows or as a man travels, and no faster. The soiled clothes of Cholera patients again will spread the disease. A Native of India dies of Cholera and his friends invariably appropriate the deceased's clothes. They are not buried with the body nor are they burnt.

Cholera spread to the American ship *Congress* by polluted drinking water.

167. I give here an instance of the manner in which Cholera was conveyed by means of drinking water. The American ship *Congress*, entered the port of Akyab on the 13th February, the crew all well. The Captain on hearing that Cholera was raging in the town forbid his men going on shore. He had a small supply of water on board and he said that the crew should use it up first before he would take any from the town. He also determined that when obliged to replenish his tanks the new water first of all should be used in the cabin. This resolution was adhered to and his chief and second officers were seized with Cholera and died. He and the Stewardess were also attacked but recovered.* It is believed that this water was obtained from the Cherrogeah creek. These particulars were furnished me by the American Consul and confirmed by several of the residents of Akyab.

Chinamen in the town escaped the disease.

168. The Magistrate of Akyab in para. 7 of his Cholera report says:—"It is a fact worthy of note that out of a population of 160 Chinamen not one man has died in the town (two however have died in the Gaol). The disease was raging on all sides of their quarter, besides many Chinamen were daily employed as carpenters at the Cherrogeah creek where Cholera was at one time worst; their habit of life was not altered during the epidemic; so this freedom from its attack may be considered very remarkable." I investigated this statement on the spot and found it to be perfectly true. The Chinamen said "we escape the disease because we always drink tea and not cold water." "The two men, who died in the Gaol, died because they could not get their tea and were forced to drink the prison water."

Chinamen, that is, the better class usually escape Cholera in British Burma. Letter from Mr. Neil McPhail on this subject.

169. This deserves attention. I heard that Chinamen usually escape the ravages of Cholera, and I have noticed that the well-to-do of that race invariably do so. The following letter is a reply to some questions on this

* This water was now thrown overboard and fresh supplies were obtained from a tank situated in the Civil lines and near the entrance to the Harbour.

subject which I addressed to Mr. Neil McPhail, in Rangoon, a gentleman who has passed several years in China. "In "reply to the remarks contained in your note of yesterday, "relative to the late outbreak of Cholera in Akyab, I would "now offer you the following information regarding the origin, "the spread, and the prevention of the disease as noted by "myself in China during a residence of 9 years in that country. "Amongst outbreaks I witnessed one in Amoy in 1860, one "in Shanghai in 1863-4, where the number of deaths were "counted by thousands daily, and one outbreak in Formosa "in 1866. As usual the disease spread to a great extent "through the exposure of the excreta, but also too through "the water used for drinking purposes. As a rule the Chi-"nese never, when they can avoid it, drink cold water, always "tea, no matter how poor they may be, so long as not abso-"lutely destitute.

"In Shanghai the class of people who principally suffer-"ed were the homeless destitute, country people who flocked "into that settlement during the time that the rebels held the "surrounding country. These people were only able to pro-"cure the very worst of food, and as they could not procure "tea had to drink water. One of the first and most effectual "expedients for checking the spread of the disease, was the "establishment of tea and soup kitchens on a large scale. "These were set afoot by the charity of the wealthy Chinese "assisted by the European community.

"During the prevalence of Cholera I have often been re-"monstrated with by Chinese for drinking water, and I have "seen hand-bills displayed throughout Amoy during a Cho-"lera visitation, warning the people against drinking uncooked "water."

170. These particulars are important and I shall watch with great interest the condition of these people during any subsequent outbreak of Cholera in our large towns. I desire that all officers will assist me in examining this question and furnish me with the results of their observations.

Importance of investigating the question of the freedom from Cholera among Chinamen.

171. The good results from sanitary measures, where properly carried out are very forcibly shown in para. 120 of this report. A similar stamping out of the disease was effected in the Toungoo Gaol. At Tooyne the village was

Good results from sanitary measures at Toungoo, Tooyne and in Akyab Gaol.

freed from Cholera in precisely the same manner. Of course in a Gaol, sanitation can be enforced without difficulty. Among a free population however, and especially in a large town where labor is not to be had, it is impossible to do any real good. At Tooyne, I was most fortunate in securing the confidence of the people, and being assisted by the most willing official, Moung Bhan, the Native judge, I experienced no difficulty in carrying out sanitary measures. The result was the immediate and entire disappearance of the disease.

172. These three instances in which undoubted and immediate good was effected by judicious sanitation, and the knowledge we have gained during the late epidemic in the town of Akyab, are sufficient to point out to us what works are necessary and the direction in which money should be spent. It is now that the improvements should be made. We are too apt to wait until a serious calamity is upon us before exerting ourselves, and then it is too late, and probably by disturbing matters the tendency is to increase the mischief we hope to abate.

Necessity for immediate steps being taken to improve the insanitary condition of Akyab.

173. I anticipated some unusual sickness would follow the Cyclone of the 15th November. I therefore at once addressed the Magistrate and the Civil Surgeon of Akyab in letters Nos. 71 and 72 dated Rangoon, 28th November 1868. I requested the Civil Surgeon to advise the Magistrate on all sanitary matters, and to watch the Public Health with more than usual care. I especially directed the Magistrate's attention to the necessity of placing the town in a cleanly state, and to prevent overcrowding among the houseless poor. My instructions were that, should any serious sickness make its appearance among the people, I was to be immediately apprised of it.

Sanitary Commissioner anticipated unusual sickness in Akyab, after the Cyclone and he addressed the Magistrate and Civil Surgeon on the subject accordingly.

174. The sanitary measures adopted during the outbreak have been fully noted in the several reports by the Commissioner of the Division, the Civil Surgeon and the Magistrate. Everything was done that common sense dictated. Two new Public Latrines were erected over the sea. McDougall's disinfecting powder was extensively used in and about the privies. Lime also was placed over many of the same and thrown into the dirty tanks, stagnant places, and

Sanitary measures adopted during the epidemic fully noted in the several reports by Commissioners of Divisions, Magistrates and Civil Surgeons.

many hollows and privies were filled up. Medicines were distributed to the people, and the Civil Surgeon and Health Officer furnished simple directions for their use. Medical aid was given to the town by house to house visitation, and all classes were invited to apply early for medicines, on the first appearance of diarrhœa shewing itself. Sixty convicts were allowed to the town for conservancy purposes and they performed much good; but what was all this worth as a means of purifying the town of Akyab—it proved a mere flea bite. The town requires regeneration, a reformation from beginning to end, and before we can hope to effect any decided good it must be drained, supplied with water and a proper system of sewers constructed.

Dry earth conservancy impossible. Sewers with flushing apparatus alone will answer.

175. To carry out the dry earth conservancy in Akyab is utterly impossible, especially in the wet weather. The expense of the necessary establishment would swamp the Municipal funds, and should one link in the chain give way, the whole system would break down. Sewers of glazed earthen-ware or iron pipes regularly flushed will alone dispose of the filth of this large town.

Total mortality in this town presumed to have reached 700. Several vague statements and guesses are made by reporting officers.

176. The total mortality in the town from Cholera during the year is presumed to have reached 700, or 3.8 per cent of the total population. Several vague statements and guesses, as we have seen, have been made in the several reports as to the actual number of deaths which really did take place. The Magistrate says numbers of dead bodies were thrown into the river and the Commissioner of Arakan supports this view. On conversing with Colonel Stevenson however, he informed me that personally he knew of only two bodies having been removed from the water for burial. The Magistrate who had ample opportunities of observing any dead bodies floating about had the practice been so common as he states, was unable to give me an account of any particular occasion on which he had seen a dead body removed from the creeks, river or harbour. He says in his letter in reply to my questions on this point: "You must remember that the current in the harbour runs very strongly and very few bodies which once get into it would be thrown upon the bank." This at once shews the difficulty of obtaining any accurate statement of the actual death rate.

177. Cholera ceased in Akyab after heavy rain on or about the end of May, but on the weather again becoming fine the disease reappeared. This was recorded by mistake as a "second visitation." It was not so, but a part of the original outbreak. In concluding the subject of Cholera in Akyab, I purpose adding here a few remarks, on topics of interest, relative to the epidemic, gathered during my second visit to that station in the month of July.

Cholera ceased about the end of May, but again appeared on a cessation of heavy rain.

178. In regard to the practice of casting dead bodies into our rivers and streams I said: "The natives of the country do not deposit their dead in the rivers and creeks. In a few instances I have known them to do so, during a very severe epidemic, but then only when a death has taken place in a boat. Again all persons who may be detected in following this filthy practice in this country are heavily fined. The Natives of India know this and are afraid to infringe the law, consequently it is a most unusual thing to see a dead body floating about in any of our streams. As yet only one person has been convicted and fined for this offence in Akyab."

The Natives of Burma do not throw their dead into the rivers and creeks as a rule. Only one person was convicted of this offence up to July.

179. On both occasions of my visits to Akyab "no instance of a dead body floating in the water was brought to my notice."

No instance during Sanitary Commissioner's visits to Akyab, of a body having been placed in the water was brought to notice.

180. It is quite natural that the human mind during a great calamity should exaggerate into frightful dimensions the worst side of the picture. We have plenty of instances of this. I am therefore of opinion, notwithstanding the statements which have been furnished me of the probable mortality, and with all due respect for the opinions of others, that, a very great number of dead bodies were not thrown into the creeks, river and harbour.

Sanitary Commissioner does not think that a large number of dead bodies were thrown into the rivers and creeks.

181. The coolies are said to have fled to Chittagong from fright. The presence of Cholera among them no doubt induced a more hasty return to their native country than is usual at this season, yet we must remember that when the demand for their labor ceases, they always return to their homes in the Northern district before the setting in of the

The coolies reported to have fled in great numbers to Chittagong.

rains. Still a sufficient number stayed behind so long as ships required loading, and Mr. Robertson says, the working of his mill up to the last moment was never inconvenienced at any time for the want of a single laborer.

The people believe in the contagious properties of the Cholera poison.

182. During the epidemic there was no necessity for establishing a system of quarantine in the country. The people themselves implicitively believe in the contagious properties of the Cholera poison, and they carried this belief into practice to the extent of prohibiting any person from entering or leaving their villages. At one village at no great distance from Akyab the inhabitants would not permit the Police boat to approach it. When Cholera however entered a village all who could deserted it. The Natives of India are blamed for the introduction and spread of the disease. They are scattered in considerable numbers throughout the country, frequently occupying small clusters of houses by themselves, and the disease as a rule attacked these people in the first instance, subsequently spreading to the Mugh population.

The manner in which Cholera was conveyed to Kyouk Phyoo.

183. I beg to record a distinct case of the conveyance of the Cholera "contagium" from Akyab to Kyouk Phyoo and to the island of Cheduba. The Extra Assistant Commissioner's wife proceeded in a boat during the epidemic accompanied by several followers on a visit to an old friend at the former place. Several days were occupied in the journey* and all remained well, but no sooner had they arrived at their destination than one of the followers was seized with Cholera and died the same night, next day the owner of the house in which this lady put up was attacked and died also. The party now proceeded to the Island of Cheduba and after their arrival there Cholera spread with considerable severity among the inhabitants.

Previous freedom from Cholera in Kyouk Phyoo. Reappearance of the disease in August.

184. Kyouk Phyoo up to the date of this visit had remained free from Cholera, and with the exception of the two cases mentioned it continued exempt. I see from Mr. Thomas' Annual report that the return wave, as it were, of the disease, after "having exhausted itself by the end of May" in Cheduba, "made its appearance at Kyouk Phyoo in August but in a very mild form." I attribute this im-

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I believe fourteen.

munity from the disease to the cleanly and excellent condition of Kyouk Phyoo. Captain Plant, the late Deputy Commissioner spared no pains to place this town in a healthy state. He was ably advised on all sanitary questions by Mr. Thomas, Medical officer in charge of the station.

To the sanitary activity which prevailed under these officers, I believe the resistance offered by Kyouk Phyoo to the spread of Cholera is mainly due. Both Captain Plant and Mr. Thomas deserve the favorable notice of this Administration for the constant interest displayed by them in the welfare of the people committed to their charge.

Villages in Cheduba have not yet received sanitary attention

185. The villages on the Island of Cheduba have not yet received the healthful improvements it is proposed to extend to them. They are overcrowded and present many unwholesome conditions favorable to the spread and development of epidemic and endemic diseases. Cholera therefore found here a congenial resting place and caused a large mortality.

Consideration of the important question how Cholera was conveyed in a boat to Kyouk Phyoo.

186. The question naturally arises how was the Cholera "contagium" conveyed in this lady's boat to Kyouk Phyoo? Certainly the boat had started from a town in which the disease was prevalent, but whether any of her passengers had come from an infected house or possessed the clothes of one who had suffered from the disease, I could not learn. Again, it is possible that the boat itself was infected. Some former passengers may have suffered from the disease while in her. All these points are probable especially the latter, but why did the poison lie latent for so many days, viz., during the whole time occupied in the passage of the boat from Akyab to Kyouk Phyoo with all the passengers cooped up in her, and only shew itself on reaching the latter healthy place, and after all had landed. This to me is the only link in the chain of evidence requiring explanation to make this little story as complete and trustworthy an instance of the conveyance of Cholera from an infected to an uninfected place by human intercourse, as that which I have mentioned of infected water communicating the disease to the ship *Congress*, in para. 167 of this report.

Sanitary improvements carried out by the Civil Surgeon and Magistrate.

187. Doctor Mountjoy and the Magistrate mention the improvements carried out and suggested during the year to be as follows:—The cesspools I complained of in the Government Ba-

zaar have been filled up; the Shoay Bra Bazaar is being rebuilt. Doctor Mountjoy generally agrees with my recommendations for the improvement of Akyab with one or two exceptions. He thinks that instead of closing the filthy tanks and wells, that every householder should be allowed a well, and that all sources of water supply at present existing should be cleaned out and put into decent order. He however only advises this step on the condition that the cesspool system be done away with altogether, and in its place, instead of instituting public latrines only for the people, that the Chinese plan of conservancy should be introduced in connection with what he calls a "Town Conservancy Farm," where the excreta might be used for manure. For a full account of Doctor Mountjoy's suggestions I beg to refer to the report itself. I would only add one word and that is, if it is possible to manage such a system in Akyab, I would prefer to see the "Japan" to the Chinese plan of latrine introduced.

Pouktan grave yard. Two old places of sepulture closed.

188. The Magistrate in his report para. 23 says, that "Pouktan grave yard recommended to be the only native grave yard and the other two to be closed." "The Pouktan grave yard to be defined as to limit and sub-divided for the different races."

"Two Chowkeedars to be entertained to look after the grave yard.

"Bazaars to be rebuilt with proper drainage.

"Nine wells containing contaminated water to be filled in.

"Bathing near Public wells prohibited.

"Construction of new latrines suggested.

"A Slaughter house to be built.

Conservancy establishment consists of 18 convicts and four carts.

189. In addition to these points the town has been kept as clean as possible with a limited number of convicts (18) and four conservancy carts. The work however to be performed before Akyab can be said to be in a good sanitary state is enormous and will take many years and much money in its accomplishment, unless the prisoners who are not able to employ their time satisfactorily or even profitably at intra-mural labour are made to do the scavengers' duties of the town on a larger scale than at present, and wherever coolies are not to be had.

I am not at all satisfied with what has been done in Akyab to remedy the evils I brought to notice in my special Report submitted in June 1869. If we place the most liberal interpretation upon the statements of the Health Officer and Magistrate, the only conclusion it is possible to arrive at, is this, that, they have backed up my suggestions, but the responsible Officers have done little or nothing.

The difficulty of procuring free labor for conservancy purposes.

190. In this country it is exceedingly difficult to induce free laborers to undertake any kind of dirty work, such as the cleaning out or removing of a latrine for instance. To my mind it would be far more just, and greatly to the purpose, if convicts as a rule, were always called upon to attend to town conservancy, and forced to perform all those duties which are repugnant to the free worker, instead of as now competing in our Gaols, with outside honest workmen and tradesmen. Money obtained in this manner would be legitimately earned and nobody could complain :—Far from it, all would be satisfied save the prisoners perhaps, and I am confident that the results would prove highly beneficial.

Healthy state of the Akyab Municipal funds. State of the funds.

191. The Municipal funds of Akyab are in a healthy state, as will be seen from the account I give of the receipts and disbursements for the year 1868-69. The balance shewn on the 31st March 1869, is no mean one, and I therefore cannot comprehend why I was told when in Akyab shortly afterwards that there was no money in hand to carry out the most simple improvements which I suggested. To prove what I say, vide letter No. 272-25, "Home Department," dated Rangoon 5th of July 1868, from the Assistant Secretary to the Chief Commissioner to the address of the Commissioner of Arakan.--(Appendix)—In it sanction as an exceptional case is given to expend Rs. 5000, (Five thousand) in "Akyab town"--"in carrying out any recommendations which Doctor Cowie may recommend," when the sum to credit on the 1st April 1869, to be spent on local town improvements and sanitary works &c., and after deducting all regular charges for the year was Rs. 35,227-0-6.

MUNICIPAL FUND.—AKYAB.

| | | | |
|---|---|---|---|
| To Balance 1st April 1868. ... ... ... ... | 21,199 | 7 | 6. |
| „ Local Cesses ... ... ... ... ... ... | 9,009 | 1 | 0. |
| Contributions from Government ... ... | 4,800 | 0 | 0. |
| „ Conservancy receipts ... ... ... ... ... | 2,456 | 9 | 6. |
| | Rs. 37,465 | 2 | 0. |

| | | | |
|---|---|---|---|
| By Collection and Management ... ... ... | 459 | 11 | 3 |
| „ Public Works ... ... ... ... ... ... | 11,173 | 11 | 0 |
| „ Miscellaneous Charges ... ... ... ... | 321 | 0 | 0 |
| „ Conservancy Charges. ... ... ... ... | 5,787 | 14 | 8 |
| Rs. | 17,742 | 4 | 11 |
| Cr. Balance on 31st March 1769 ... ... | 19,722 | 13 | 1 |

BAZAAR FUND.—AKYAB.

| | | | |
|---|---|---|---|
| To. Balance on 1st April 1868 ... ... ... | 6,847 | 9 | 7 |
| „ Collection from Lands, Houses, &c., ... ... | 2,151 | 0 | 0 |
| „ Miscellaneous Receipts... ... ... ... | 0 | 12 | 0 |
| Rs. | 8,999 | 5 | 7 |
| By Collection and Management ... ... ... | 276 | 9 | 8 |
| „ Public Works... ... ... ... ... ... ... | 229 | 10 | 0 |
| „ Conservancy charges. ... ... ... ... ... | 537 | 10 | 0 |
| Cr. Balance on 31st March 1869. ... ... ...Rs | 7,955 | 7 | 11 |

SHOAY-BYAH BAZAAR FUND.

| | | | |
|---|---|---|---|
| To Balance on 1st April 1868 ... ... ... ... | 7,538 | 9 | 5 |
| „ Collections from Lands, Houses &c. ... ... | 571 | 5 | 3 |
| Rs. | 8,109 | 14 | 8 |
| By Collection and Management... ... ... ... | 188 | 13 | 8 |
| „ Public Works... ... ... ... ... ... ... | 59 | 14 | 0 |
| „ Conservancy charges ... ... ... ... ... | 312 | 7 | 6 |
| Rs. | 561 | 3 | 2 |
| Cr. Balance on 31st March 1869. ... ... ... | 7,548 | 11 | 6 |

Towns separately considered.

I now come to the consideration of the Sanitary condition of some of the chief towns of the Province separately.

## ARAKAN DIVISION.

Town of Kyouk Phyoo visitation of Cholera and Small Pox.

192. KYOUK PHYOO :—This town and district was visited by Cholera and Small Pox during the year. The former is reported to have appeared in the month of March and ceased in the month of August. It proved fatal to 1,241 persons,—the chief mortality having occurred in the Island of Cheduba. The latter first shewed itself in the month of February in the same Island and spread to the town of Kyouk Phyoo ; it caused a total mortality in the whole district of 72 souls, 38 only having succumbed to the disease in the town of Kyouk Phyoo. It is said that this outbreak of Small Pox is looked upon by the people as the first time that the disease has been

known in the Island of Cheduba. Here again a fact was observed, which I have repeatedly brought to notice before viz: that both Cholera and Small Pox are contemporaneous in their visitations.

Cleanly state of Kyouk Phyoo. Measures taken by Mr. Thomas during the Epidemic.

193. The town of Kyouk Phyoo is well kept. The drains are continually cleaned out and the water supply is good. As regards the Cholera, medicines were freely distributed by Mr. Thomas, the Medical Officer in charge of the station, throughout the whole district, accompanied by written instructions in the vernacular. In fact both the Medical Officer and Mr. Macrae, the Deputy Commissioner, exerted themselves among the people and did all in their power to stay the progress of the disease.

Vaccination was set on foot by Mr. Thomas, but proved unsuccessful.

194. Mr. Thomas reports in connection with the measures adopted on the appearance of Small Pox, that vaccination was immediately set on foot, "but to our great sorrow our efforts proved perfectly unsuccessful when the native practitioners resorted to inoculation and no fewer than 5,899 individuals including males and females indiscriminately were inoculated."

Mr. Thomas visited the Island of Cheduba Condition of the water in the tanks and wells

195. Mr. Thomas visited the Island of Cheduba in the month of February. He says "my principal attention was directed to the water from the tanks and wells, and I was struck with the appearance of some of the drinking water which I had collected, which was of a brick dust colour and perfectly charged with foreign matter." Doubtless the spread of Cholera here was very seriously influenced by this bad water. I have addressed Mr. Thomas requesting that a supply of the Cheduba tank and well water may be forwarded to me at once for analysis.

Mr. Thomas' Cholera Map is perfectly useless.

196. Mr. Thomas' Cholera map is next to useless. The names of the chief towns only are entered, but not those of the villages through which the disease passed; strength of population, extent of mortality and dates are also omitted. It is a very rough sketch indeed with a dotted line shewing the supposed course of the disease, which exhibits a jumping process across miles of the sea and large islands, unaccompanied with any account of the probable means of communication. Really this is a very careless production. Full printed instructions were

forwarded to all Civil Medical Officers in my letter No. 92 dated 30th of August 1869, as to the manner of making Cholera maps. Mr. Thomas has had ample time to render me the necessary particulars.

Sandoway is well attended to by the Deputy Commissioner, Mr. Treacy.

197. SANDOWAY :—This is a very clean and well ordered town. Mr. Treacy, the Deputy Commissioner, having given great attention to its sanitary welfare during the year. The drains are kept clean and no accumulations of filth are permitted; a gang of convicts is constantly employed for conservancy purposes. The drainage of the town is good both "naturally and artificially." The water is obtained from wells and from a few springs. "The wells are six in number from which good drinking water is obtained, they are situated in the S. E part of the town at the foot of a hill, the springs feeding them from under the hill".—Mr. Pyster the Medical Officer of this station, makes some excellent suggestions regarding the protection of these sources of supply from pollution which the Deputy Commissioner is attending to.

Measles in the early part of the year. Mr. Treacy's Cholera map is a good one.

198. Measles were noticed in the early part of the year. This disease was mild in type and of short duration; it caused 13 deaths. Sandoway however escaped both Cholera and Small Pox. The former traversed the district. Mr. Treacy says "I enclose a sketch map of the vicinity of Sandoway, shewing the villages attacked (by Cholera); you will observe that they are all on the north of the Sandoway river and in its immediate vicinity, from their nearness to the Island of Ramree, the natural inference would seem to be that the disease was imported from thence more especially as the village of Tsengoung is the place to which boats from Ramree principally come. But as during the whole time of the outbreak the rain was abundant and the air naturally purified thereby the occurrence of the disease at all is somewhat singular, perhaps but for the abundant rainfall the mischief would have been greater." In this view I fully agree with Mr. Treacy. The disease was undoubtedly conveyed to the Sandoway district as the dates of its progress indicate, and from Sandoway it was transmitted south, down the coast road to Bassein, where it reached in the month of July 1868.

Cholera appeared in Sandoway in the month of August, and entirely ceased in November 1868.

199. Cholera appeared in the Sandoway district in the month of August—the first case was recorded on the 6th of the same month and it seemed to entirely cease

on the 9th of September. During this period there were in all 45 cases and 23 deaths. The disease however only remained in abeyance during heavy rain for fresh reports of its outbreak near the hills in the northern township, and close to Toungoop which escaped, were brought in on the 10th of October. 94 persons it is said were seized of whom 65 died. The district was not entirely freed of the disease until the end of November. Mr. Treacy thinks that this was a second outbreak perfectly distinct from the first and spontaneous in origin. I cannot coincide with this opinion, and I am confident that Cholera was in the Sandoway District long anterior to the 6th of August, but was not reported.

The town of Sandoway escaped Cholera altogether.

200. The town of Sandoway itself entirely escaped the disease. Medicines were distributed freely by the Medical Officer throughout the district and everything was done to check the disease that could be done. The cleanly state of Sandoway and the attention paid to its water supply were the true reasons why it escaped a visit from Cholera on this occasion. Mr. Treacy has furnished my office with valuable information. His Cholera map is well executed and shews that he not only thoroughly understood my instructions on this subject, but has taken great interest in the work.

Rainfall and temperature.

201. The total amount of rain fall in the town of Sandoway for the year was 195·35 inches, being 61·80 inches less than that recorded in the previous year.

Public Health good.

202. The town has been very healthy during the year. Measles and Fever were the only diseases which caused any anxiety and they were not severe.

## PEGU DIVISION.

Rangoon. Excluding Fever in the overcrowded quarters the Public Health has been good.

203. RANGOON:—If we exclude the fatal endemic Fever described in last year's report, and which Doctor Heffernan, the Civil Surgeon, mentions in the 30th paragraph of his Sanitary report as "most prevalent in Kemendyne, Yambonquin, Botatoung, Poozoondoung and the Madrassee quarters, overcrowded lowlying localities, many of them swampy, and in where sanitary measures seemed never to have been adopted," I say if we exclude all this, then the health of Rangoon has been very good.

Improvements effected during the year. Works now in progress.

204. In my Annual Sanitary Report for 1868, I described very carefully the insanitary condition of Rangoon, and in examining the Public Health and Vital Statistics I drew particular attention to the insalubrity of the quarters I have just mentioned. I expressed myself freely on all questions of hygiéne, neglecting nothing which I deemed it essential to suggest as requisite in structural or municipal works to raise our standard of health. I have now a most agreeable task to perform. It only remains for me to record here the progress which has been made in the twelve months, chiefly based on my recommendations, and to relate what is at present being done to accomplish the vast engineering works so immediately called for to meet the requirements of our rapidly increasing community.

Cholera in Dalla in December. The disease did not spread.

205. In the month of December a few cases of Cholera were observed in Dalla and near Dunneedau. The disease did not spread, and I only mention the fact here as the circumstance is referred to in my Cholera map. No epidemic outbreak of any disease occurred in Rangoon in the year.

Conservancy establishment increased during the year.

206. During the year both the Health Officer and the Magistrate found it impossible with the small establishment at their disposal to keep certain filthy and unhealthy localities in any thing like a decent state. The Chief Commissioner having been addressed on the subject, my opinion was asked, and in letter No. 86 dated the 14th of August 1869, I recommended that an immediate increase to the conservancy gang and carts should be sanctioned, this was attended to. The strength of the Department is now as follows:—

2 Conservancy Officers,
2 Maistries,
13 Carts with 1 Bullock each, and
91 Convicts.

Private latrines and cesspits still universal. Three public latrines owned by private persons.

207. The system of privies still continues as of old. It is however worthy of note that there are now three public latrines in the town owned by private individuals as a speculation. One of these has been in existence for many years. I have fully entered on the subject of both private and public latrines in paragraph 47, for natives in towns. I am satisfied that there is room for a limited number of

public necessaries in Rangoon, and I am equally convinced that the people should be permitted to have privies on their own premises if properly conducted as suggested by Mr. Macrone. But the only system which to my mind will answer in every respect is a proper sewerage. I quote here the remarks of the Magistrate which deserve attention: "The difficulty is, what are the poorer, and the mass of the population to do, if these pits (cesspools) are wholly discontinued? The Magistrate is fully of opinion that the dry earth system would only prove a great failure and a vast expense, and although prepared to give his reasons for this opinion if called upon, he does not consider it necessary to enter into them now. The system he would advocate for the poorer and thickly populated quarters, is an improved description of the three latrines mentioned in paragraph 46 of the Report (Civil Surgeon's) owned and kept up by private individuals for public use. These are doubtless known to the Sanitary Commissioner and are described in paragraph 47. They can be kept clean, and the system is thoroughly adapted to, and understood by the natives, and therefore might be easily worked. These latrines should of course be roofed, the drains more sloped (made of glazed material or chunamed (cemented), the reservoir well protected and moveable, and many other improvements that might be suggested. In the vicinity of the existing Latrines the Magistrate has insisted on the abolition of the pits, and although the landlords objected at first and tried to make difficulties they carried out the orders without referring the question to a jury—the great want is public latrines, and until they are provided it is impossible to discontinue the generally existing evil." Captain Evanson says this "system is thoroughly adapted to, and understood by the natives." I presume he means Natives of India? I have said that the subject is receiving attention. My only difficulty is to contrive a privy for public purposes which shall not only embody all the sensible suggestions forwarded to me by numerous experienced officers, but prove acceptable to the people, Natives of India as well as Burmese, and yet work well and cheaply. I await, as I have already mentioned in paragraph 49 the results of the working of Mr. Gubbins' plan of latrines, which Colonel Stevenson is causing to be tested in the Arakan Division.

Nature of works undertaken in the year.

208. The following is a description of some of the works undertaken and completed during the year for the benefit of the people

and their improved health:—They may be called purely sanitary works.

i.—Remetalling Montgomerie Street from China Street to a little east of Sparks street.

ii.—Cleaning out the Port Tank at Dallah, a most important work, to preserve potable water for the supply of the shipping visiting the harbour.

iii.—Metalling Municipal boundary road from east of Cantonment boundary road to Poozoondoung.

iv.—Metalling Tseetkay Moung Kain Street and raising the same between Strand road and Canal Street.

v.—Raising and metalling Mogul Street from Dalhousie Street to Fraser Street in Block B. 1. and B. 2.

vi.—Raising and metalling 21st, 22nd, 23rd and 24th Streets in Block B. 1. & B. 2.

vii.—Raising and metalling town Slaughter house road.

viii.—Repairs to Municipal roads. Repairs consist of filling up ruts, cutting grass and weeds on the berms of the roads and cutting grips in the sides to carry off rain water to the drains.

ix.—Raising the ground under the houses in the Chinese quarter of the town, and also on unoccupied land in Blocks B. 1. & B. 2. This work is not quite completed, but the most desirable places have been partially raised.

x.—Building brick drains and culverts in Blocks E. 2. F. F. 1. F. 2. F. 3. G. G. 1. and G. 2. The whole of this work has not as yet been put in hand, but three or four culverts F. & G. have been constructed, which will carry off the water that usually inundates the land in this locality.

xi.—Planting road side trees in the town.

xii.—Raising Latter street and constructing drains at the sides of the road.

xiii.—Metalling Keighly street from old Boundary road to Kemendyne road.

xiv.—Constructing a timber bridge on the Strand road near West Street.

xv.—Metalling Phayre Street extension from Montgomerie Street to the Lake.

xvi.—Metalling the road skirting the Lake from Phayre Street extension as far as the Lake outlet.

xvii.—Repairs to the Main Wharf.

xviii.—Constructing a boat jetty near Monkey Point Battery on the Rangoon river.

xix.—Constructing ditto, on the Poozoondoung creek.

xx.—Raising, laying out, and constructing drains in Fyche Square (about 17 acres situated in the heart of the town proper.)

xxi.—Deepening 11 wells in the town of Rangoon. It is contemplated to sink (probably) 15 new wells and to erect pumps therein.

Many works of a minor description also completed in the year.

209. This is a list of some of the works which have been undertaken during the year.; of course there are many others which it is quite unnecessary to mention here. A very good idea however of the actual work performed may be gathered from a perusal of Captain Evanson's and Dr. Heffernan's full and carefully prepared reports.

Structural works now under the consideration of Colonel A. Fraser R. E. C. B. in the D. P. W.

210. I now proceed to notice the great structural Engineering works, which Colonel Fraser, the Chief Engineer of British Burma is at present considering, and which must be taken in hand and commenced without loss of time, or the health of Rangoon will retrograde, and be accompanied by serious mischief. I have been favored with a view of the project for reclaiming the low lying land east of East Street in the town, and as my opinion was requested, I wrote the subjoined note :—

" Colonel Fraser, the Chief Engineer of British Burma, having forwarded all the papers in connection with the above project to me and desired my opinion, I have examined them very carefully and I now most cheerfully comply with his request as follows :—

" ii.—It is proposed to raise a large area of ground in this town, at present a mere swamp, above high water mark, with a view of rendering it habitable for the excess of our population. The structural works necessary to this end, and the financial scheme for their accomplishment are admirably detailed and fully explained in the estimate submitted by Mr. Mathews, and its accompanying Minute by Colonel Fraser. On these points I do not feel called upon to express an opinion. The question which naturally presents itself to me and with which as Sani-

tary Commissioner, I am competent to deal is this (*a*):—Will the proposed scheme prove beneficial to the town, and if so, is there any necessity for its immediate undertaking? This is an extremely simple matter to answer. The subject has been fully set at rest by the complete arguments of Colonel Fraser, Chief Engineer; Mr. Mathews, Ex. Engineer; Major Duff, the Town Magistrate, and I may also say by myself. This however is insufficient. It is very often extremely easy to make an assertion, but not always quite so easy to prove it. In the present instance however in reiterating what I have brought to notice before in another place, I shall now support by incontrovertible evidence. To proceed :—

"iii.—The portion of land to be reclaimed lies east of East Street, that is, the most easterly limit up to which the regular town has extended, and is somewhat triangular in shape. Taking the apex as Monkey (Battery) Point, its two sides are formed by the Poozoondoung creek and Rangoon river; the base being East Street itself in its greater part and a portion of the Poozoondoung road. The banks of these two streams in their whole extent, as far as this site is concerned, are occupied by rice mills, oil mills, saw mills, extensive godowns and timber yards. The remainder of the land is a filthy swamp, subject to the overflow of spring tides.

"iv.—Now as this land is situated between all the mills and godowns of the trading population of Rangoon and the Town proper, the tendency of the people is to increase in this direction, and this must uncontrollably be the case so long as trade of any kind prospers in British Burma; but apart from its valuable position as the centre, it may be said, of the busiest part of Rangoon, it is absolutely necessary that the people should locate themselves in it, simply because, and I desire what I now say may be distinctly understood, there is no other site where the increase of our population can go to.

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NOTE. (*a*):—As far as I understand the matter, it is proposed to form a boat Canal from the west of Botatoung on the Rangoon river to the Poozoondoung creek for the safe passage of country and cargo boats, proceeding from the one to the other, (Government stores and troops will proceed by this route also, to Toungoo and other stations on the Sittoung) instead of as now having to go round Monkey (Battery) point where the waters meet; and where should there be any wind, the danger owing to the contrary tides is very great. (I have been upset no less than three times myself at this point in trying to weather it.) The earth taken from this canal is to help to fill in the swamp; the remainder of the land to be raised by the aid of a dredging machine and a small tramway. The former is to be employed in deepening the channel near the Hasting's shoal—a work absolutely necessary in itself to keep the entrance to the Rangoon harbour open for large ships—and to convey the earth so obtained to the tramway. The whole site is to be raised about two feet above the highest spring tide, and to be sold as fast as laid out with good roads and drained. The proceeds will undoubtedly cover far more than the outlay. It is further proposed when the work is completed, to supplement it by a well laid tramway, to commence at Monkey Point, which shall skirt all the mills and godowns and terminate at Kemendyne. This is to facilitate the conveyance of passengers and produce from the Irrawaddy valley to the great depôts of trade and labor markets. The receipts, in tolls from the Canal, and from goods and passenger traffic on the tramway, will there is not the slightest doubt, return a very profitable interest on investment and leave a large margin to liquidate the original cost.

"v.—All the land in the town proper which has been raised and drained is occupied or sold, and as purchasers build on their property and new houses are continually springing up in every direction, squatters and would be purchasers are obliged to quit. Gradually but surely the outlying quarters of the town are becoming by this means daily more overcrowded, more filthy and terribly sickly.

"vi.—It has been found necessary during the year to act very harshly towards the people. For the preservation of health and life, to guard the healthy portions of the town against the invasion of endemic and epidemic diseases, we have obliged the people in the overcrowded suburbs of the town to thin themselves out. I say we have acted harshly towards these people, in as much as we have sent them adrift without providing for them other and more suitable resting places. What has been the consequence? Along the sides of every road which has been marked out through this very swamp, every accessible portion of ground which is less covered with water than the rest, has become built over and occupied by crowds of immigrants, and by the squatters evicted from the Botatoung and other overcrowded quarters.

"vii.—I cannot say that matters have improved. These new sites in the slop and mud are already overcrowded, and the deadly endemic Fever, and other serious diseases, which take their origin among large masses of people living in association in their own filth, still continues. Surely something is necessary to be done, and what that something is, it is not difficult to see. Healthful building sites must be found for the natural increment to our population and for the increase of trade. Therefore, as this swamp is the only direction in which the town can extend itself, it must be raised and drained, and that too quickly.

"viii.—The unclaimed and undrained portions of Rangoon are not of course saleable; consequently, immigrants and other settlers are driven into their present hovels. It must be remembered that a large proportion of these people are well to do, and that they only live as at present from sheer necessity. The majority would buy land if they could get it.

"ix.—In my Annual Report for 1868, in mentioning two of the most unhealthy situations in Rangoon I said 'both the Deputy Commissioner and myself have done all we can to improve these quarters, but they are mere swamps and must re-

main so until their turn comes to be reclaimed. The chief situations in which this fever occurs are subject to tidal inundations and it is impossible to prevent overcrowding. The labor market in Rangoon is a large and most important one. Wages are good, consequently a vast concourse of people assemble in the suburban lots as squatters. We cannot thin them out simply because we are unable to provide suitable localities for their location. Rangoon increases so rapidly that the means at the disposal of the authorities are not sufficient to keep pace with the requirements of the people. The poorer classes are therefore overcrowded, and they may be said to kill themselves off by associating in large numbers and living in their own filth.'

" x.—The total deaths in the three most unhealthy quarters of Rangoon, viz: Yambonquin, Botatoung and Poozoondoung, to strength of population in 1868, stood thus:

| | Population. | Deaths. | Births. | Decrease. |
|---|---|---|---|---|
| Yambonquin..... | 8,629 | 255 | 176 | 79 |
| Botatoung..... | 3,273 | 159 | 109 | 50 |
| Poozoondoung. | 11,024 | 327 | 181 | 146 |

" xi.—The death rate for the three quarters is 32·3 which is exceedingly high. The ratio of deaths per cent at 5 years of age and under to total deaths in the same localities, is 34·5; and in the proportion of the sexes of 100 males to 75 females. The populations of the three quarters decreased in the year by 275 persons. We have no very satisfactory means of determining the annual increment these positions receive by immigration, but from the figures in the returns it is apparent, that should their total strength and death rate continue as at present, the whole of the inhabitants would be renewed in a space of about 80 years, instead of probably doubling themselves by natural causes alone in the same period.

" xii.—I say we have no means of ascertaining the actual increase these situations receive by immigration. Last year the population of Rangoon including its suburbs was set down at 72,695 in number. In the month of December last, Captain Evanson, the Officiating Town Magistrate, took a rough census, and he calculated the population to amount to about 96,000; but to shew how fallacious his returns must have been, a case has recently been brought to light, in which the inmates of a house, in one of these very overcrowded quarters, was set

down at a total of four (4) persons only, whereas no less than seventy (70) people slept in it on the night the census was taken. This is no exception proving a rule, on the contrary, the inhabitants of these situations for fear of eviction have very generally rendered him imperfect information.

"xiii.—Judging from what I know of Rangoon after a residence in it of seven years, I feel certain that were a correct numbering of the people made, the total inhabitants of Rangoon would be found to be approaching nearer to 150,000 than 96,000.

"xiv.—In conclusion, want of building room for the healthful extension of the inhabitants of Rangoon is not the only reason I would urge for the reclamation of this extensive area of land, for undoubtedly the position itself is a most unhealthy one and a source of danger to the whole town. The miasm arising from its reeking swamps and rank vegetation is certainly one of the chief causes of the malarious fevers and allied diseases met with in Rangoon."

Water supply for Rangoon. Old scheme not sufficient. New project by Colonel A. Fraser, C. B. Chief Engineer, British Burma.

211. The Water supply of Rangoon has engaged the attention of the Local Government for several years. The Royal Lake scheme mentioned so frequently in my Annual Sanitary Reports has been somewhat departed from. The original plan although admirable in principle was calculated to meet the requirements of Rangoon when in its infancy. It soon became evident however, that the town increased so rapidly that some additional source of supply would be imperatively necessary, if the original idea was to be carried out. Colonel Fraser has therefore submitted to Government a fresh scheme planned and estimated to supply a much larger population with good potable water than Rangoon is thought to contain at present. This new project admits of easy extension in case of need hereafter, and possesses an admirable element to success in its ridiculous cheapness of construction—a point of no slight consequence in these absurdly hard times.

Analysis of the Royal Lake water.

212. In my Annual Report I have frequently described the water contained in the Royal Lake to be good and potable. I now record the results of its analysis.

| | |
|---|---|
| "Total hardness... ... ... ... ... ... ... ... | ·332 |
| Permanent hardness... ... ... ... ... ... ... | ·333 |

Reaction neutral
After concentration, feebly alkaline
In 70000 grains.

| | grains. |
|---|---|
| Solid residue... | 5·0 |
| Organic matter.... | 1.5 |
| Inorganic... | 3·5 |
| Earthy, salts, silica... ... ... ... | 1·2 { includes carbonate of lime ·9 grains. |
| Alkaline, Chloride and... Carbonate with trace of sulphate | 2·3 grains |
| Nitrous acid... | none. |
| Nitric acid... | none. |

Doctor Macnamara, the Chemical Examiner to the Government, says the "water is very free from mineral constituents, very soft, and contains a very moderate amount of organic matter."

Main features of new project. Two sources of supply: gathering ground and depth of water.

213. The main features of the new scheme are thus detailed. The sources are for the present to be two in number, viz: the "Kyandaugyee" or Royal Lake, and the "Kokein" Reservoir. The area of the lake is about 160 acres, the gathering ground is about the same in extent and the lake itself is supposed to be fed by springs. The depth of water when level with the entrance to the supply pipe is about 4 feet.

The area of the "Kokein" Reservoir is 446 acres, and is to be fed by 240 acres of gathering ground and direct rain fall. The depth of the water will be when on a level with the lowest supply valves close upon 6 feet.

The distance between the "Kokein" reservoir and the "Kyandaugyee" lake is 51,000 feet; the level of the mouth of the supply pipe in the latter above the town of Rangoon is placed at 21 feet and its distance from the town 7180 feet.

The daily consumption of water in Rangoon including the shipping is calculated at 20 gallons per head of population.

The water is to be distributed by means of double stand pipes at the inter-section of all 100 feet streets.

During the dry weather allowing for evaporation and other waste the probable available capacity of both sources will be 70 and 178 days supply respectively. The water to be led through filtering beds before it is turned on to the town.

214. Here then is a grand and very simple project for supplying Rangoon with good water, and the chief points on which it is based may be summed up in a few words. Good potable water in sufficient abundance, at a healthful distance from the town, which can be easily laid on and at the smallest possible cost. The difficulty which has been experienced from the first in the execution of any plan of water supply, is, I believe, the want of funds. This should not form a serious obstacle. Money might be raised on a loan for the purpose, and the interest and original outlay paid by a water rate. I know there are many here who will open their eyes, and wonder "what next"!, at the idea of my suggesting that Asiatics should pay for water. Such people are ignorant of the ways of the people, they observe nothing.

Now scheme to cost very little money. Proposed that a water rate should be levied.

215. It is a strange thing that we should always make a "buggaboo," to use a vulgarism, about the introduction of all sensible reforms,—changes expressly considered advantageous to the people, for fear of meddling with their prejudices. We take it for granted that difficulties will arise, or that some possible hardship may result, when there is nothing of the kind to be apprehended. Thus, it not unfrequently happens, that while we are doubting and casting about to treat the natives by some specially favored process, these very people from necessity, help themselves, and gradually effect customs, identical with those measures but in a rough manner certainly, which we had hoped to establish for them. Take as an example, the system of public latrines put up and worked in Rangoon by native agency only, not Burmese who have no caste prejudices and never offer the slightest opposition to sanitary changes, but by Natives of India, the very caste ridden creatures, who are supposed to create all the trouble, and who we are everlastingly desiring to propitiate.

Imaginary difficulties in introducing new system. Burmese already paying for water. No opposition feared.

216. Again, the custom of purchasing water is steadily growing up among us. It is usual for the better class of Burmese, Chinese and even a large majority of the Natives of India to employ coolies to draw water for them, at the rate of about one pice per two chatties full per diem. In Maulmain, Obo and in the suburbs, the practice may be said to be almost universal. The prices paid for water therefore range from 4 or 5 rupees, among the poorer classes, up to 240

Water can be supplied by water works cheaper than by the mode adopted at present. People to be ratably taxed.

rupees or more perhaps among the European inhabitants per annum; whereas a rate levied for a supply from an efficient system of water works would not probably exceed 1, 1-8 and 2 rupees per annum for the laboring classes, and would allow, instead of one or two chatties a dozen or more per diem. The richer classes, the merchants and the shipping would of course pay more, and thus the impost would be fairly met.

Present cost of water to Europeans and other residents.

217. At present, living as a bachelor, I pay a waterman 7 rupees a month or Rs. 84 a year, and I fancy double men, or family men, take a double quantity and at quite double that cost.

Aggregate receipts easily calculated. Project estimated to cost between 4 & 5 lakhs.

218. The calculation as to the aggregate receipts likely to be realized from such a rate could be very readily made if required. The scheme is estimated to cost between four and five lakhs of Rupees—a mere song to expend on a suitable water supply for a large and growing town like Rangoon.

No opposition anticipated. Income from water, rates expected to pay 5 per cent on loan besides covering ordinary expenses and gradually liquidating original outlay.

219. There can be no question that the people (the Burmese especially) would accept the scheme quite as gracefully as they accept all real improvements for their immediate benefit: And that the receipts from a general but equitable rate, such as I should like to see demanded, would pay an interest of at least 5 per cent per annum on the loan, and yet leave a considerable surplus to meet repairs and to gradually liquidate the first outlay is sufficiently apparent. These two fundamental points having been satisfactorily disposed of, I hope it will not be long before the works are put in hand.

Pressing necessity for a water supply recognised. Proposed loan for the purpose;—to be raised in Rangoon itself if approved of

220. We are all satisfied of the pressing necessity for a water supply in Rangoon; it is needless therefore to say more on this subject here, and I am sure I have written enough about it for years. We are equally alive to the fact that money must be obtained to carry out the works. If the Government should feel a disinclination to provide the necessary funds itself, then permit a loan to be opened in Rangoon for the purpose, and the amount would be subscribed fast enough. A guarantee might be required, but that is a question for others to settle. One thing is certain, the

Government might take the risk with far surer prospects of a successful issue, than is likely to be the case as regards some of the Municipal works in the Presidency towns.

Again brings to notice the want of a Lock Hospital in Rangoon. Establishment provided and money sanctioned for an institution but nothing has been done.

221. In closing my remarks on the sanitary state of the town of Rangoon, I desire again to bring to notice the absence of a Lock Hospital. It is absurd to extend the "Contagious Diseases Act" to the civil population without first of all providing a suitable building for the reception of the unfortunates. Of course the Act cannot be put into force without a proper Hospital in connection with it. I believe an establishment was budgetted for and approved of sometime since. I also learn that the Government of India sanctioned Rs 10,000 for a building as far back as the month of August last. Nothing however has reached me officially on the subject, and I speak therefore subject to correction. If I am right in what I say, however, some one is deserving of blame. At this moment* I believe there are 16 soldiers of H. M.'s 21st Regiment in Hospital suffering from venereal, and the Rangoon General Dispensary may be said to be daily crowded with such cases seeking relief.

Statement of Rangoon Municipal Funds.

222. The following is a statement of the Municipal Funds of Rangoon.

MUNICIPAL FUND.

| *Income.* | Rs. | A. | P. |
|---|---|---|---|
| Local Cesses... ... ... ... ... ... ... | 79,921 | 0 | 0 |
| Interest on Government Securities... ... | 2,500 | 0 | 0 |
| Collection from Lands, Houses, &c. ... ... | 710 | 0 | 0 |
| Miscellaneous receipts... ... ... ... ... | 5,676 | 12 | 10 |
| Conservancy receipts... ... ... ... ... | 1,025 | 1 | 7 |
| | Rs 89,832 | 14 | 5 |
| *Expenditure.* | | | |
| By Debit Balance on 1st April 1868... ... | 1,05,433 | 7 | 4 |
| „ Collection and Management... ... ... | 3,352 | 15 | 2 |
| „ Public Works... ... ... ... ... ... | 41,436 | 9 | 5 |
| „ Police... ... ... ... ... ... ... | 41,150 | 14 | 9 |
| „ Miscellaneous charges... ... ... ... | 2,168 | 14 | 3 |
| „ Conservancy... ... ... ... ... ... | 8,697 | 15 | 10 |
| | Rs 2,02,690 | 12 | 9 |
| Debit Balance on 31st March 1869 | Rs. 1,12,857 | 14 | 4 |

* 28th of April.

LAND SALE AND RENT FUND.

| | | | |
|---|---|---|---|
| To Amount invested in Government Promissory Notes ... ... ... | 50,000 | 0 | 0 |
| „ Collection from Lands, Houses &c. ... | 1,48,952 | 9 | 1 |
| „ Miscellaneous receipts... ... ... ... | 11,249 | 7 | 0 |
| „ Transfer and Assignments... ... ... | 11,330 | 7 | 0 |
| Rs | 1,71,532 | 7 | 1 |
| By Debit Balance 1st April 1868 ... ... | 77,494 | 11 | 3 |
| „ Collection and Management... ... ... | 8,190 | 10 | 5 |
| „ Public Works... ... ... ... ... ... | 64,333 | 0 | 3 |
| „ Miscellaneous receipts... ... ... ... | 6 | 8 | 0 |
| Cr. Balance on 31st March 1869... ... ... Rs. | 21,507 | 9 | 2 |

Exclusive of Rs. 50,000 in Government Securities.

Public Health greatly improved. Town never seen so cleanly. Great credit due to Health Officer and Officiating Town Magistrate; their reports deserve attention.

223. A most marked improvement is observed in the general cleanliness of the town. I may say although far from perfection I never knew Rangoon to be so clean or so healthy as it has been lately, and unquestionably the credit is due to the exertions of the Health Officer and to the very active and judicious measures instituted by Captain Evanson, the Officiating Town Magistrate. The reports of these two officers are full and important and should be attentively read.

Total Rainfall in Bassein. Health of people considered "unsatisfactory."

224. BASSEIN.—The total rainfall in Bassein during the year was 89.14 inches. "The maximum occurred in the month of June." The public health has not been good. Dr. Nisbet, the Civil Surgeon, says, it has been "unsatisfactory as measured by the mortality—which is very high (33 per 1000.)"

Cholera appeared in the month of August. Sporadic in character. Ceased towards the end of the month. Weather hot and unseasonable.

225. Cholera appeared on the 1st July on the opposite side of the river to Thenkangin, a quarter of Bassein; from this date up to about the 1st August the disease abated during heavy rains, but again shewed itself on the 17th of the month, when three cases were registered. After this it died out altogether. Dr. Nisbet remarks that the cases were all sporadic (?) in character. Major McMahon, the Deputy Commissioner considers that "the present exceptional weather—sultry with little or no rain is in my opinion

sufficient to account for the enhanced rate of sickness in the town; to be dispelled entirely, I trust when we get heavy rains."

Meteorological table and mortality in July, compared from 1865 to 1869.

226. Dr. Nisbet gives the following meteorological table and mortality in the month of July, from 1865 to 1869.

| Year. | Thermometer. | Rainfall. | Mortality. |
|---|---|---|---|
| 1865... | No record... | No record... | 88 |
| 1866... | 79° F... | 15.75... | 101 |
| 1867... | 78° | 16.09... | 51 |
| 1868... | 79° | 23.57... | 66 |
| 1869... | 80° | 18.85... | 119. |

He is astonished at the appearance of Cholera in the rains. I have already in paragraph 58 stated that I believed the disease in Bassein to have been a prolongation of the epidemic witnessed in Arakan, in fact, part of the same visitation, extended viâ the coast route from Sandoway favoured by a high temperature and unusually scanty rainfall. These two atmospheric phenomena alone were quite sufficient I think, to account for the presence of the disease in Bassein, which had so recently been raging in a neighbouring district.

Conservancy bad. Latrine not provided with an establishment. Convicts employed to improve the drainage of town and Dr. Nisbet very improperly debited with the cost of their labour.

227. Bassein in addition to the unseasonable weather, suffered from defective conservancy. The town was filthy in many parts. The new and well built public latrine erected at "some expense" near the bazaar was not even supplied with an establishment, although the Chief Commissioner sanctioned the same shortly after my inspection of the town in the month of April. In my Annual Report for 1868, I recorded my opinion that the town, station and institutions of Bassein under the charge of Dr. Nisbet exhibited at the time of my visit, a neatness and cleanliness highly creditable to him as Health Officer. The insanitary state in which Bassein has since been allowed to fall into must be attributed to the constant changes of the District Officers which took place subsequently, and not to any want of energy on the part of Dr. Nisbet. On the contrary, he seems to have been very hardly dealt with, if I may judge from his own words. He writes: "During the

outbreak of Cholera which caused some alarm, a gang of convicts was employed in clearing out the drains and raising some of the lowest and least salubrious levels in the town, but these improvements ceased with the panic which caused them and little permanent improvement resulted from a measure which was inaugurated at the risk, and *alas !!!* at the expense of the Sanitary officer (who draws at present no pay from the municipality) and after all the drainage is very little benefitted by the spasmodic effort in question and remain to the last degree defective." It has not been reported to me that Dr. Nisbet has been re-imbursed for this trifling but most necessary outlay. I trust that the Chief Commissioner will call for a report on this subject, and direct that whatever amount may be due to Dr. Nisbet be paid to him at once, out of the Municipal funds of Bassein.

228. Doctor Nisbet regrets the state of the conservancy of the town. The great difficulty here is the want of labour and funds. He says, "our latrine,—we have only one—is still closed to prevent its becoming a nuisance by being used, as convicts are now available for extra-mural work it is hoped this state of things will not last and that the neglected state of private latrines which is observable in all directions will be as stringently dealt with by the same means." Major McMahon reports that "sweepers will not work native latrines." The employment of convicts as nightmen and scavengers is most proper. This is just the kind of work our prisoners should be forced to perform; and that their labour should be utilized in this manner is fast becoming a matter of absolute necessity, if our large towns are to be kept in a wholesome condition. I have addressed the Magistrate of Bassein requesting information regarding the sale of putrid meat in the bazaar. It is disgraceful that no endeavour should have been made to check the sale of unwholesome food.

The services of sweepers to work the Public Latrine difficult to engage. By a late order of Government convicts are to be worked on extra-mural labour. Suggested that prisoners should be employed as nightmen and scavengers.

Magistrate of Bassein addressed on the subject of the sale of putrid meat in the Bazaar. No check seems to have been placed on the sale of unwholesome food.

229. I have asked the Deputy Commissioner to select a more suitable site for a decent native grave yard to be at a reasonable distance from the town and suburbs. Very proper rules for the better management of native grave yards have been promulgated

Deputy Commissioner addressed on the subject of a new site for a Grave yard for Bassein. Rules for the proper management of these places already in force.

in the Pegu Division, and they are now being introduced gradually and with judgment by District Officers.

230. I cannot support Doctor Nisbet's suggestion that the river water although tidal should be admitted into the town privies with the view of flushing them, because the water at certain seasons and periods of the tides is largely used for drinking purposes both by the people in the adjacent villages and by the shipping. The plan would prove highly improper, and even dangerous to the public health. A plan of a cheap and easily worked public latrine will shortly be placed before the Local Government for approval. Private latrines if allowed must be constructed and managed as I have described in paragraphs 46 and 47.

The Sanitary Commissioner cannot approve of privies in Bassein being flushed with the river water as the same is used in the neighbourhood for drinking purposes. A new plan of latrine will shortly appear.

231. The mortality from all causes in Bassein during the year was 641 in a population of 20,111 souls, or at the rate of 3.18 per cent. The most prevalent and fatal diseases were Cholera, Fevers, Asthma, Dysentery and Diarrhœa, all resulting from bad water, low lying, filthy and undrained ground. They are certainly preventible. Of course we have not arrived at that thorough knowledge of epidemic Cholera to enable us to state distinctly how far the disease depends for its origin upon defective sanitation. To me however it is apparent, that in those places where the sub-soil drainage is perfect, the water is above suspicion, and all other healthful improvements and precautions are equally attended to, there, Cholera loses its malignant and epidemic character, and in some instances would appear to have been banished altogether.

Population of Bassein is set down at 20,111. Death rate in 1869. 3.18 per cent. Most prevalent and fatal diseases: Cholera, Fevers, Asthma, Dysentery and Diarrhœa.

232. MYANOUNG.—This town has been very healthy during the year. Nothing could exceed the sanitary attention paid to its welfare by the Deputy Commissioner, Captain Plant, and by Mr. Godbier, the officer in medical charge of the station. They have most willingly and energetically carried out my instructions and rendered me every help in their power during the year.

Myanoung very healthy during the year. Great attention paid to all Sanitary Commissioner's recommendations by Captain Plant, Deputy Commissioner and Mr. Godbier, Medical Officer.

233. The mortality was small being 2.7 per cent on the supposed total strength of population. Cholera marked in my

Death rate for 1869 was 2.7 per cent. Cholera visited station on the 10th December. Supposed to have been introduced by immigrant coolies from Upper Burma.

map in blue, (second visitation) showed itself in Myanoung on the 10th December. But I had better quote here Mr. Godbier's own words: "Cholera of a sporadic epidemic form made its appearance on the 10th December. It is difficult to trace the origin of the disease unless it may be supposed to have made its way down from Upper Burma, one of the first cases occuring being an emigrant from there, seeking employment. It may also be observed that the day previous to the occurrence of the first case, the body of a Burman was cast on the river bank, and was probably a case of Cholera thrown into the river from one of the boats, and to this source the disease at this station may owe its origin. At this season of the year large numbers proceed in search of work to the south, some by boats and a great many on rafts down the river, while the others take the high road and the disease is traceable along both these routes as cases had been reported. The disease ceased on the 30th December after which there was no fresh cases reported, it was subsequently reported to have made its appearance at Kanoung, a station a few miles to the south and on the same bank of the river, at Mengyee on the opposite bank, and lastly at Donabew, so from this fact it is reasonable to suppose that its course was south." This entirely supports my view of the nature of this 'second visitation' of Cholera in British Burma during the year. I visited Myanoung, Henzadah, Zaloon, Donabew and Nyoung-Doon at this season. Save in the last town a few cases only were observed at the other stations, and of no great consequence beyond the fact that, they distinctly illustrate the direction in which the disease travelled. The chief particulars and dates of its progress will be found in the explanatory notes which accompany my Cholera map.

New Bazaar inadequately ventilated. This is to be remedied at once.

234. Mr. Godbier calls attention to the want of ventilation in the new bazaar. I examined this building in company with the Deputy Commissioner, and he informed me that the matter had been brought to the notice of Mr. Macrone, Assistant Secretary to Chief Commissioner P. W. D., during his tour of inspection, and that the evil complained of was to be rectified at once. It is therefore unnecessary for me to say more on the subject here.

235. Mr. Godbier has furnished no Cholera map of the Myanoung district such not being necessary, as only a few cases of the disease were noticed and they were principally confined in the town and were very properly recorded as they occurred. Mr. Godbier however has submitted a carefully drawn up report.

Cholera map not necessary. All cases faithfully recorded. Mr. Godbier's report very satisfactory.

236. PROME.—Colonel Horace Browne, the Deputy Commissioner, in his remarks on the Civil Surgeon's Report describes the "Atmospheric phenomena" of this our principal frontier district in these words: "The year 1869, was one of great heat and scanty rainfall. No Thermometrical Register was kept at Thayetmyo till late in the year. At Prome the Thermometer in March and April rose to 103° F. At Prome the total rainfall during the year was 34 inches and Thayetmyo 33 inches against 48 inches at both places in 1868."

Atmospheric phenomena. During the months of March and April unusual high temperature. Rainfall exceedingly scanty.

237 I have now the most pleasing duty to report that the horrible Prome town swamp, or old Fort ditch, has been very nearly filled in. Colonel Horace Browne writes:—"In last year's report the commencement of the work of filling in the great Prome town swamp was mentioned, but desponding remarks were made regarding the time within which the work was likely to be completed. Since then the energy and activity of a new Executive Engineer, (Mr. Hallett) have changed the face of matters. The swamp has now nearly disappeared. The Sanitary Commissioner has seen the work which has been performed and will be best able to describe the beneficial influence it is likely to exert upon the sanitary condition of the town."

Reports that the old Prome Fort Ditch or town swamp has very nearly been filled in, through the energy and activity of Mr. Hallett, Executive Engineer.

238. The ditch is now almost a thing of the past. This extensive excavation has been a "bugbear" to all sanitary improvement in Prome for years. We must not forget, while rejoicing at the happy termination of our trouble, however, that, it was Colonel David Brown, now Commissioner of the Tenasserim Division, who first handled the difficulty. He commenced the healthful changes now in progress towards completion. Before Colonel D. Brown left Prome for his present post, one-third at least of this fever-bed had been filled in, levelled and

The work of filling in Prome swamp first undertaken by Colonel David Brown, Commissioner of Tenasserim One-third of the work completed by him with prison labour only.

laid out for building purposes, under his immediate superintendence and with prison labour alone. To him therefore is the credit to be given for the inauguration of this vast work, a work which has already borne good fruit and which must when thoroughly accomplished, in the largest sense, increase the health and happiness of the people of Prome.

Plans of Public Latrines forwarded to Colonel H. Browne, for opinion. Prome conservancy calls for immediate attention.

239. I have, as I have before stated, forwarded some plans of Public Latrines for natives to Colonel H. Browne for his opinion. In the meantime I await his reply before taking further steps in connection with this vital question. Prome is one of our largest inland towns and its conservancy is a matter of very grave importance and requires immediate attention.

Cesspits in Prome and well water similar to that found in overcrowded quarters of Rangoon.

240. The wells in the town of Prome are very similarly situated to those in the overcrowded parts of Rangoon. They are surrounded with cesspits and the water is so offensive that no person uses it. The people obtain their drinking water from the river and suburban localities.

Prome one of the oldest towns in British Burma. Soil impregnated with accumulated excreta of ages. Well water oily looking and brackish.

241. Colonel H. Browne describes the soil of Prome in which the town wells are sunk thus :—"The present site of the town has been occupied longer as a town probably than any other spot in British Burma. The surface soil no doubt is thoroughly impregnated with the accumulated excreta of ages. There are ridges of gravel here and there, but the sub-soil consists generally of rich black mould highly fertile but of doubtful healthiness. Wells sunk through it yield nothing but a brackish oily looking fluid of brackish taste, which few people like to use for bathing. There are a few exceptions among the wells around the kills on which the great pagoda is built. Really good drinking water is obtainable only from a well known as the "Thauk-dawre well" about two miles from the river bank."

The people obtain their supplies chiefly from the river. Reason why this source is of doubtful purity.

242. The people obtain their drinking supplies chiefly from the river, but this source is of very doubtful purity in the dry weather, when the stream is exceedingly sluggish and especially so at the situations where it is drawn. The habits of the people "all along the rivers bank are decided-

ly opposed to public decency and public hygiene." Moreover, the people as a rule bathe regularly every day, and they always do so at the very localities from which they draw their water supplies. Thus the river water near the town must become polluted. The chief bathing place is south of the town. I have requested that some of this water may be forwarded to me for analysis at the end of the hot season, and when the water in the river is at its lowest.

Remedies suggested for improved water supply: Iron cylindrical or artesian wells: Public Latrines: private necessaries and Conservancy rules.

243. The remedies I would suggest for the improvement of the water supply of this station are the sinking of good iron cylindrical or artesian wells in properly selected places, or the formation, when the funds will admit of the same, of reservoirs and a regular system of water works. The erection of Public Latrines and the regulation of private necessaries on the plan suggested in paragraphs 46 & 47, of this Report, will effectually do away with the nuisances committed on the river's bank, if proper rules are framed to meet the difficulty. The river water south of the town must continue to be more or less polluted, and in this direction if the people will resort to it in preference to any other for bathing purposes, they must at all events, when an abundance of potable water is obtainable from other sources, be strictly prevented from drawing their domestic supplies from this situation also.

Probable cause of the Prome Diarrhœa. The manner in which the river water is polluted.

244. Colonel Browne draws attention to the Bowel Complaint, which so frequently follows the use of this water, and especially attacks new arrivals at Prome. He thinks and with much reason, that "the cause of this local deterioration of the river water" is due to the Naweing creek "which drains a large bog—a quaking mass of decaying vegetable matter"—and to a perennial stream of "black fœtid slush" which rolls into the Irrawaddy just above it. To all this he adds, the filthy habits of the people in the desecration of the bank of the river, the dirt from the brokers huts, and from the large number of boats which are always moored alongside receiving and discharging cargoes. Colonel Browne believes Prome will, by and bye, have to draw its water supply "from a reservoir which might easily be constructed in the hills behind the town." In this I thoroughly agree with him, in

fact, I suggested the very same thing in my Annual Report for 1867-68.

245. Cholera appeared twice in the Prome District, in the early months of the year and on the second occasion in December. The particulars of these visitations are given elsewhere. The disease at Thayetmyo in April, May, July, August and September was in my opinion a return of the same outbreak witnessed in various parts of the country in the latter months of the year 1868, favored by the great heat and drought. Cholera had never ceased in Upper Burma, and was raging in Arakan at the same time as at Thayetmyo immediately across the Yomah hills, which separate the two districts, and between which there is constant communication.

Cholera appeared twice in the Prome District, during the year In the early months of the year and again in December.

246. The coolie village on the north side of the nullah at Thayetmyo alluded to by Colonel Browne as having probably extended the disease, and which he thinks ought not to have been allowed there at all was in existence years ago. Colonel Browne describes the village to have been in a most filthy and discreditable condition.* The disease however did not originate here. In the several reports forwarded to this office no reason is given for the probable manner in which Cholera found its way into Her M.'s 76th Regt:—I believe its entreé is considered quite unaccountable to this day. I think however the fact that some of the regimental sweepers lived in this village a very significant one.†

Village in which Cholera first appeared north of Cantonment discreditably kept. Probable manner in which the disease was introduced into H.M.'s 76th Lines.

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* NOTE:—These lines were partly cleared away last year, but latterly they have been removed altogether.

† The frequent expressions made use of by most Medical officers in this Province, when describing the progress of Cholera, such as, "the disease jumped from" this place to that, or "it skipped over" such and such a quarter, and many other terms equally delusory, would lead to the belief that, either the disease propagated itself in a most mysterious manner, or that, there is a great deal of ignorance displayed on the subject. Now, I unhesitatingly declare that, Cholera in British Burma never plays any tricks or vagaries of this kind I have never known of an instance where the spread of the disease could not be most satisfactorily explained; and during the past 16 years I have been professionally, either actively engaged in treating the sick, or indirectly watching and suggesting measures for checking the progress of nearly every serious Epidemic which has visited the country. My opinion therefore is based on no mean experience. I have been lately told however by a Medical officer of some standing that I am "riding a hobby," that I have "some theory of my own," and that I make everything to fit to it." Now, I deny this in *toto* and without arguing the point, I simply request all Medical officers to examine the matter for themselves, and they will be very quickly convinced that Cholera never travels from one place to another without there exists a medium of communication. In this country of water-ways with but few roads, the fact that Cholera spreads by means of water and human intercourse is sufficiently evident. We must be blind indeed if we cannot read what is almost yearly brought before us, and to deny evidence so plain,—even the ignorant natives themselves admit its verity would be as good as to declare that facts prove nothing

247. The usual Prome Fair did not take place this year. Small Pox being very prevalent in the town, the people shewed their good sense by declining to hold one. This Fair is of annual occurrence, and is looked upon in a commercial point of view as very important.

Prome Fair not held on account of the great prevalence of Small Pox.

248. I visited Prome in the early part of the year purposely to be present at the Fair and also to help to check the outbreak of Small Pox. I was most unfortunately delayed at this station through the carelessness of some one in not relieving the Civil Surgeon, Dr. Macdonald, who had received permission to proceed to Europe and which he availed himself of in February. I was forced therefore to stay and perform the duties of Civil Surgeon myself as well as those of Sanitary Commissioner until the 23rd March, when Mr. Godbier of the Madras Establishment relieved me. I say I was most unfortunately detained at Prome, because I was *en route* to Arakan, and would have availed myself of the assistance offered me by Captain Hood, who left with Government Elephants on the 20th February. I also missed reaching Akyab in time to be of much use in the Cholera outbreak at that place.

Visit to Prome in the early part of the year. Detained unnecessarily and thereby lost a chance of proceeding to Arakan.

The full particulars of my proceedings at Prome will be found in the Appendix.

249. Mr. White the officer at present in Medical Charge of the station gives the following Meteorological table for the year 1869.

Meteorological table for 1869.

| Months. | Barometer | | Thermometer | | Wind. | Remarks. |
|---|---|---|---|---|---|---|
| | Max. | Min. | Max. | Min. | | |
| January ... | 29·95 | 29·85 | 90 | 56 | N. E. | Cold & foggy mornings. |
| February ... | ·95 | ·70 | 95 | 57 | S. W. | Cold. Occasional fog. |
| March ... | not | taken | 103 | 62 | W. & S. W. | Hot weather. |
| April ... | not | taken | 103 | 74 | S. & S. W. | Thunder & lightning and typhoons of dust. |
| May ... | 29·82 | 29·48 | 102 | 77 | S. & W. | Thunder & lightning, squalls from N. W. |
| June | ·75 | ·50 | 97 | 77 | S. & W. | Thunder & lightning. Overcast sky. |
| July ... | ·82 | ·54 | 90 | 76 | S. W. | Thunder and lightning close weather. Eclipse of moon. |
| August ... | ·82 | ·60 | 90 | 71 | S. W. | Cloudy weather and thunder. |
| September.... | ·82 | ·60 | 88 | 74 | S. W. | Cloudy weather and thunder. |
| October ... | ·94 | ·60 | 88 | 70 | N.E.& S. W. | Cloudy weather. Squalls from N. E. Thunder. |
| November... | 30·07 | ·63 | 90 | 70 | N. & S. W. | Fogs. Cloudy days. |
| December .. | ·94 | ·74 | 98 | 60 | N. & N. W. | ditto. ditto. |

250. The rainfall during the past four years or for 1866, 67, 68 and 69 was as follows :—

Table of Rainfall for four years.

| YEARS. | 1866. | | 1867. | | 1868. | | 1869. | | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|
| Months. | Inches. | Tenths. | Inches. | Tenths. | Inches. | Tenths. | Inches. | Tenths. | |
| January . . | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| February . . | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | |
| March . . | 0 | 0 | 0 | 2/100 | 0 | 8 | 0 | 0 | |
| April . . | 0 | 0 | 0 | 2/100 | 1 | 5 | 0 | 5 | |
| May . . . | 2 | 7/100 | 8 | 49/100 | 4 | 9 | 3 | 3¾ | |
| June . . . | 14 | 27/100 | 6 | 57/10 | 7 | 61/10 | 7 | 8¾ | |
| July . . . . | 7 | 18/00 | 3 | 94/00 | 14 | 6 | 5 | 9 | |
| August . . | 7 | 45/00 | 5 | 8/00 | 8 | 49/00 | 3 | ½ | |
| September . | 12 | 69/00 | 4 | 73/00 | 5 | 33/00 | 6 | 7½ | |
| October . | 18 | 5 | 4 | 1 | 3 | 59/00 | 5 | 3½ | |
| November . | 3 | 8 | 1 | 56/00 | 1 | 67/00 | 0 | 6 | |
| December . | 0 | 8/00 | 0 | 67/00 | 0 | 0 | 0 | 0 | |
| TOTAL.... | 66 | 4/00 | 35 | 13/00 | 48 | 34/00 | 34 | 0 | |

For several years the S. W. Monsoon has been gradually becoming lighter and lighter. The rainfall in former days used to be set down at 80 inches in the year, but why it is so scanty now is not apparent; no extensive cultivation or forest clearings have taken place. Last year Colonel Browne suggested that the readings of two Pluviometers should be registered at Prome that a comparison might be made and errors detected. An additional instrument has not as yet been sanctioned.

Death rate for the year set down at 64 per 1000. Strength of population not known. Rate considered far too high.

251. The death rate in Prome for the year 1869, is set down at 64 per 1000. This indicates a worse state of the public health than really exists. If we deduct the fatal cases of Cholera 114, and Small Pox 355, the mortality from ordinary causes was 4.5 per cent. We do not know the actual strength of the population of Prome. I believe it to be given in the returns at far too low an estimate; and although I am quite prepared to admit that the health of the town has been anything but satisfactory during the year, I am quite satisfied that until a correct census is taken all our data must be in error and merely guess work.

Prevalence of Venereal diseases at Prome. Necessity for extending the Contagious Diseases Act to this town.

252. Venereal diseases form a large percentage of the sickness in Prome. I have already recommended that the "Contagious Diseases Act" should be extended to this town. Thayetmyo can never be freed from Venereal Diseases if their spread is not checked in this large neighbouring town. Surely it is as much our duty to protect the people of the country as the European soldier from contagious diseases. But apart from this philanthropic question; if we keep the diseases within reasonable bounds in Prome, we necessarily benefit the garrison station of Thayetmyo which is situated only a few miles to the north of it.

Prostitutes to escape the action of Cantonment Act at Thayetmyo have removed to Prome.

253. I have already reported that the introduction of the Cantonment Act caused the majority of the Thayetmyo prostitutes to proceed to Prome. I presume the Government never intended to banish the women from the station; or a simple order would have effected that purpose. The result however has brought about pretty much the same thing. Whether they will return or not remains to be seen.

A Lock Hospital has been built at Prome. The expenses of working the institution should be defrayed from the Municipal funds which are rich.

254. There is already a small Lock Hospital at Prome but it is not in use. The expenses of the necessary establishment and the working of the Act, if put into force here, could easily be met out of the Municipal funds which are rich; and, as the benefit to be derived would be local, it is quite proper that the attendant expenses should be so met.

Receipts, expenditure and balance in hand of Prome Municipal Funds for 1868-69.

255. I here give an account of the funds to credit, expenditure and balance in hand of the Municipal funds of Prome, for the year ending 31st March 1869.

*Income.*

| | | | |
|---|---|---|---|
| To Balance in hand 1st April 1868 ... ... | 72,531 | 7 | 0 |
| Local Cesses ... ... ... ... ... ... ... | 19,211 | 11 | 3 |
| Collection from Lands and Houses ... ... | 23,970 | 3 | 6 |
| Miscellaneous Receipts... ... ... ... ... | 3,684 | 11 | 5 |
| Total Rs... | 1,19,447 | 1 | 2 |

*Expenditure.*

| | | | |
|---|---|---|---|
| Collection and Management... ... ... ... | 5,275 | 10 | 6 |
| Public Works... ... ... ... ... ... ... | 11,533 | 12 | 7 |
| Conservancy charges ... ... ... ... ... | 2,781 | 4 | 0 |
| Police ... ... ... ... ... ... ... ... | 5,549 | 14 | 0 |
| Transfers and Assignments ... ... ... ... | 11,330 | 7 | 0 |
| Miscellaneous charges ... ... ... ... ... | 681 | 0 | 0 |
| Total Rs... | 37,152 | 0 | 1 |
| Balance in hand on 1st April 1869.....Rs... | 82,246 | 1 | 1 |

A large amount of money has already been spent by the D. P. W., in filling in the Prome swamp, but this will be more than recovered again by the sale of the reclaimed land, and the Municipal Funds will be a decided gainer by the transaction.

Sanitary state of Thayetmyo good. Lock Hospital, Cantonment rules, Section 18, Act XXII of 1864, and Notification No. 1238, 8th March, *Gazette of India* page 502, extended to town.

256. THAYETMYO:—In paragraph 70 of this report, I have mentioned the vast improvements which have been made in this station; I reported its sanitary condition to be good. The out-

break of Cholera is also dilated upon in paragraphs 61-72. It only remains now for me to add the actual steps taken in the matter of "Contagious diseases." Colonel Browne reports that: "During the year a system of registration and examination of prostitutes in the town of Thayetmyo has been introduced. This is not carried on under the 'Contagious Diseases' Act XIV of 1868, which has not been extended to Thayetmyo, but under the Cantonment rules framed under section 17, Act XXII of 1864. By Notification No. 1238, dated 8th March 1869, published at page 562 of the *Gazette of India*, the Governor General in Council was pleased to extend these rules outside Cantonment limits to the tract contained within the Municipal limits of the town of Thayetmyo. A Lock Hospital was accordingly established by the Military Authorities, but under the superintendence of the Civil Surgeon, and in June a Notification was issued by the Assistant Commissioner calling on prostitutes to register themselves, and the rules have been enforced against all women known to be prostitutes."

"The legality of the measures taken by the Assistant Commissioner is somewhat doubtful as no provision appears to have been made under Section 26 of Act XXII of 1864, regarding the officers by whom breaches of the rules outside Cantonment limits should be enquired into, but the effect of the measures taken appears to have been most salutary." These effects are mentioned in paragraph 55 of this report.

Public Health good. Small Pox introduced by inoculators. Stamped out by active measures.

257. TOUNGOO:—The general health of this station has been good during the year. Small Pox was introduced by inoculators, from the South, but the season evidently was not a favorable one for its spread, and it has since been stamped out by the energetic measures adopted by Captain Hughes, the Deputy Commissioner.

Induced by Captain Hughes, Deputy Commissioner, the Burmese are supplying the town with good well water at their own expense &c.

258. I desire particularly to notice here, although mentioned in another part of this report, the judgment exercised by Captain Hughes in directing philanthropic persons desirous of spending their money on useful public works, to do so in suitable places. In this manner he has induced the Burmese to construct some really excellent wells in the town in selected spots and where most needed. Others are now in course of being sunk. Here, instead of digging wells

just for the fun of the thing in all sorts of out of the way places, the Burmese are supplying the town of Toungoo with good water and without a penny of expense to Government or a pie of aid from the Municipal funds. Captain Hughes is certainly turning their religious "works of merit"—superstitions, to good account. I wish I could induce all District Officers to follow in his footsteps. I do not mean by this that Captain Hughes is an exception in this respect: I think I have shewn already the numerous benefits conferred on the people in different parts of the country brought about in the same way by Colonel David Brown, Colonel Horace Browne, and a few others. As a rule however, it must be admitted that many good opportunities have been and still are let slip of turning these resources into a right channel by District Officers, who dislike interfering with what is vulgarly called the "prejudices" of the people.

Usual rainfall 99 inches. Actual quantity in 1869, 46.90 inches. Crops splendid and Public Health good.

259. The usual rainfall at Toungoo is about 99 inches. This year the total amount registered was only 46·90. The crops however were splendid and the health of the people has been unusually good.

Bazaar Latrines not kept in good order. Constant supervision absolutely necessary.

260. The Public Bazaar Latrines at this station is not kept as clean as it should be. I found it very dirty at the time of my visit. I am quite aware of the difficulties of obtaining efficient establishments for these purposes in British Burma, and of the almost impossibility of working the Reverend Mr. Moule's dry earth system outside a Gaol, but I am equally sure that much improvement would follow if constant supervision were exercised.

Improvements suggested for Fort Ditch at Toungoo submitted in letter No. 127, dated 23rd November, to the Assistant Secretary to the Chief Commissioner.

261. As regards the Fort ditch at Toungoo, I have addressed the Assistant Secretary to the Chief Commissioner on the subject of its insanitary condition in letter No. 127, dated Rangoon 23rd November, and offered suggestions for its improvement. Steps I understand are now being taken to rectify matters. (See Appendix.)

Maulmain Meteorological table for 1869.

262. MAULMAIN:—The following table shews the meteorological observations recorded at Maulmain during the year 1869.

| MONTH. | Mean daily Maximum. | Mean daily Medium. | Mean daily Minimum. | Rainfall. | Prevailing winds. |
|---|---|---|---|---|---|
| January . . . | 83 | 76 | 67 | 0 | N. E. |
| February. . . | 84 | 78 | 70 | 0 | " |
| March . . . . | 88 | 82 | 75 | 0 | N. E. & S. W. |
| April . . . . | 90 | 85 | 79 | 2·65 | S. |
| May . . . . . | 97 | 83 | 79 | 11·45 | S. W. |
| June . . . . | 83 | 80 | 78 | 64·95 | " |
| July . . . . | 81 | 79 | 74 | 48·75 | " |
| August . . . | 83 | 80 | 77 | 35·45 | " |
| September . . | 82 | 79 | 77 | 16.8 | " |
| October . . . | 83 | 80 | 76 | 9·55 | " |
| November . . . | 84 | 74 | 69 | 025 | " |
| December . . | 84 | 79 | 71 | 0 | " |

The average amount of rainfall in the year or 189·85 inches.

263. In Maulmain there was no sensible diminution in the amount of rainfall during the year. No less than 189.85 inches were registered. The crops were good.

Prison labor for conservancy purposes no longer permissible. Small free establishment engaged during the year. Some slight improvement in cleanliness observed.

264. The conservancy of the town formerly conducted by prison labor, is now attended to by a gang of 10 coolies under the supervision of a Conservancy Officer. In my Inspection Report of Maulmain I drew attention to its neglected sanitary condition. The great complaint was want of money to carry out the most simple works. During the past year however the above establishment has been entertained and some slight good has resulted.

Income and Expenditure of Municipal Funds, shew a debt at the end of the year of Rs. 22,843-8-4.

265. The Municipal funds of Maulmain as published by the Accountant General of British Burma, shew a debt of Rs. 22,843-8-4 against the town.

*Receipts.*

| | | | |
|---|---|---|---|
| Local Cesses... ... ... ... ... ... ... | 57,245 | 6 | 0 |
| Collection from Lands, Houses &c..... ... | 3,476 | 9 | 11 |
| Miscellaneous Receipts... ... ... ... | 208 | 0 | 0 |
| Total. Rs. | 60,929 | 15 | 11 |

*Expenditure.*

| | | | |
|---|---|---|---|
| By Balance 1st April 1868 (debt.) ... ... ... | 19,930 | 0 | 4 |
| Collection and management... ... ... ... | 3,412 | 5 | 6 |
| Public Works. ... ... ... ... ... ... ... | 17,726 | 5 | 3 |
| Police. ... ... ... ... ... ... ... ... | 35,693 | 15 | 4 |
| Miscellaneous charges. ... ... ... ... ... | 4,002 | 6 | 4 |
| Conservancy do ... ... ... ... ... | 3,008 | 7 | 6 |
| Total. | Rs. 83,773 | 8 | 3 |
| Debt on 31st March 1869... ... ... ... | Rs. 22,843 | 8 | 4 |

Rs. 3,008-7-6 considered inadequate for conservancy purposes.

266. The smallest sum was expended on conservancy, but of so large an amount as that shewn above, collected for municipal purposes only, a greater provision should certainly have been made to meet the expense of keeping the town clean and decent. If on the other hand the local funds are insufficient to meet the general expenses then by all means impose additional local taxes. We certainly ought to be capable of dealing with these minor municipal matters, without looking to the Imperial Government for assistance. The resources at our hands are large and quite equal to the requirements of the town if properly availed of.

Drinking water is obtained from wells, which are numerous. It is of good quality.

267. The drinking water in Maulmain is good. It is obtained in the same way as in Rangoon from wells, sunk in the laterite soil. Dr. Marr describes them as numerous, and with one or two exceptions kept in good repair.

Public Health good. A few cases of Cholera and Measles were observed.

268. The Public Health has been good. No serious Epidemic outbreaks have occurred. A few cases of Measles and Cholera were registered. Dr. Suffrein says that the latter was "sporadic."

Cholera spread to Maulmain from Hpagat. It was "genuine Asiatic Cholera"—vide Cholera Map, red line. The disease ceased in Mergui.

269. Cholera was extended to Maulmain from Hpagat. The disease was true Epidemic Cholera, or to use the Civil Surgeon's own words in his report to the Magistrate, dated 19th February, "genuine Asiatic Cholera," and was a part of the first "visitation" depicted in my Cholera map (in red), which ultimately ceased in Mergui, the southern-most district of British Burma.

Probable reasons for the immunity which Maulmain and Rangoon enjoy from serious outbreaks of Epidemic Cholera.

270. Why Maulmain and especially Rangoon invariably escape any serious outbreak of Epidemic Cholera has yet to be explained. Some say that the laterite soil is inimical to its spread. I fear this will not hold good in all parts of British Burma. My own belief is this. Both stations are well drained, and the spring water in the laterite rock is exceedingly pure. The rock itself generally rises to the surface, is of considerable density, tenacious or clayey, and percolation through it is exceedingly slow and difficult. Wells have to be sunk at some depth, as the water bearing stratum lies below the laterite, or more properly speaking, between its layers,—and pollution from surface drainage is almost impossible if their outlets are nicely constructed. Now it is perhaps needless to tell any one that all classes of people prefer to drink this water to any other, and that if there is truth in the theory of the propagation of Cholera by impregnated water,—and I think we have very great reasons for accepting it,—then of course Rangoon and Maulmain must escape the disease in any very severe form. But in reality do these places entirely escape this terrible malady? No they do not. At certain seasons, in the lowlying and overcrowded suburbs of those towns and their neighbourhoods built on river deposits and subject to tidal overflow, Cholera is seen, but never to any very serious extent. Again, Cholera I believe has very rarely appeared in the higher portions of either station. I am told that for seventeen years not a single instance of the disease has been witnessed in the Cantonment of Rangoon; and as regards myself, I cannot call to mind having seen it, or even heard of it, in the finished quarters of the town, during a continuous residence here of nearly eight years, six of which were passed in a most extensive and varied public and private practice.

Former filthy condition of Maulmain Bazaars. Reported since to be more cleanly kept and inspected with greater regularity.

271. No proper attention was formerly paid to the Bazaars in Maulmain. I have already reported to the Chief Commissioner the filthy condition in which I found these places when inspecting the station. I am glad to learn that they have latterly been kept "tolerably clean" and are more regularly inspected by the responsible officers.

There are no rules for the decent management of the Public markets in Maulmain. The buildings are ill constructed and food is sold under the most unwholesome conditions.

272. It is a monstrous pity that these Bazaars are not held by Government for the municipality. No rules are in force for their decent management, but in my opinion it is utterly hopeless to look

for any real improvement in the conduct of these Institutions so long as they are owned by private persons. The present buildings are ill constructed, and food is sold under the most unwholesome conditions.

Bazaar rents a legitimate source of Municipal income. Bazaars in Maulmain owned by private persons. Loss to local funds. Increased taxation necessary.

273. The rents derivable from Public markets are a most legitimate source of Municipal income. This cannot be disputed. The actual loss in cash therefore to the town of Maulmain is very great by allowing private individuals to erect Bazaars, and if the existing institutions are to remain in private possession, then the deficiency in the local funds must be made up by additional taxation.

Increased taxation necessary where Bazaars are held by private persons. Private Bazaars held by Natives of India. At Zaloon on the Irrawaddy a bazaar has been erected by a Native of India without permission.

274. How can towns in the East obtain funds for conservancy and sanitary improvements, when deprived of their chief sources of income, otherwise than by the imposition of increased local rates? The majority of the private Bazaars in British Burma are owned by foreigners, by Natives of India, men who screw the uttermost farthing out of the people, do no local good, and take the money away with them to their own country. The truth is, the money which should be helping to maintain our towns in a healthful condition, is being sucked out of them to enrich distant Natives of India, originally most probably some speculative coolies. In the town of Zaloon on the Irrawaddy, I saw a new Bazaar which had recently been erected by a miserable looking Native of India and I believe without the permission of the Commissioner of the Division, at any rate he should never have been allowed to build such an Institution for his own benefit in any place whatever. These are just the kind of people we do not want in British Burma and they should not be encouraged in any way.

Private Bazaars inspected and found filthy, badly built and perfectly unsuitable. Suggested that Govt. should hold and manage all Bazaars.

275 All the private Bazaars which I have inspected, as compared with those erected by the Government, are filthy, badly built, perfectly unsuitable and altogether a disgrace to us as rulers of the country. For the prosperity of the people; for the improved sanitation of towns; for the certainty that food will be sold under wholesome conditions, and finally, for the health, happiness and comfort of all classes, Bazaars must be held and managed by the Government in the absence of municipalities.

Suggestion for the purchase of all private Bazaars by Government.

276. There can be no mistake about the profitableness of these municipal institutions. A glance at the table I have given in paragraph 78 is sufficient to show this. I would therefore recommend that the local Government purchase the right title and interest of all private Bazaars throughout the country if possible. Once having secured these places they should all be cleared away and proper buildings erected in their stead. Doubtless this arrangement would prove an expensive proceeding at the outset, but some of the private bazaars are now paying 100 per cent and upwards,—the security therefore looks good. If on the other hand this cannot be, then on the principle of *Ut quimus, quando ut volumus non licet*, I would impose very heavy local duties and insist upon heavy Bazaar licenses &c. and get all I could out of the proprietors.

Venereal diseases and open prostitution gaining ground.

277. Dr. Suffrein observes that "Venereal diseases have shewn a tendency to increase, and open prostitution is certainly gaining ground in Maulmain." Unless I recapitulate *ad nauseam* what I have repeatedly said on this subject I am quite unable to ventilate the matter further, or to offer any additional suggestions.

Thermometrical table and total rainfall.

278. SHWE-GYEEN :—The following table exhibits the total rainfall and Thermometrical observations for the year 1869, in Shwè-Gyeen.

| MONTHS. | Thermometer. | | | Fall of Rain. | | Prevailing winds. |
|---|---|---|---|---|---|---|
| | 6 A.M. | 2 P.M. | 6 P.M. | Inches | Tenths | |
| January . . . . . | 60° | 82° | 80° | 0 | 0 | N. E. & S. E. |
| February . . . . . | 65° | 92° | 87° | 1 | 4 | N. E. & S. E. |
| March . . . . . | 72° | 99° | 92° | 0 | 0 | N. E. & S. E. |
| April . . . . . | 75° | 99° | 92° | 3 | 5 | E. S. E. S. W. |
| May . . . . . | 70° | 96° | 82° | 9 | 5½ | E. S. E. S W. & N. |
| June . . . . . | 78° | 88° | 82° | 54 | 2½ | S. E. & S. W. |
| July . . . . . | 78° | 88° | 81° | 47 | 8 | S. W. |
| August . . . . . | 78° | 90° | 80° | 33 | 1 | S. W. |
| September . . . | 78° | 99° | 81° | 25 | ½ | S. W. |
| October . . . . . | 79° | 91° | 81° | 8 | 4½ | S. W. N. E. & N. W. |
| November . . . . | 68° | 89° | 79° | 0 | 0 | N. E. & N W. |
| December . . . . | 67° | 83° | 78° | 0 | 0 | S. E. N. E. & W. |
| | | | Total. | 183 | 1 | |

Two-thirds of the rice crops destroyed by flood in 1868. Rain just the right quantity in 1869. Crops unprecedentedly good.

279. Two-thirds of the rice crops in the valley of the Sittoung in the year 1868 were destroyed by extensive floods. This year they were unprecedentedly good. I travelled all over this part of the country in the months of September, October, and November and everywhere the Burmese told me that they had neither had too much nor too little rain.

Shwè-gyeen is one of the cleanest towns in the province. As a Sanitary Officer Mr. Cooper is indefatigable.

280. Shwè-gyeen is one of the cleanest towns in the whole province. Mr. Cooper the Medical Officer in charge of the station is unremitting in his attention to sanitary matters.

Wells in the laterite soil contain good potable water. Several doubtful wells in town recommended to be closed.

281. There are about 90 wells in Shwè-Gyeen; those which possess the purest water are situated in the laterite soil, near the higher ground; those in the town contain in many instances supplies of doubtful quality. I recommended that several of these latter should be closed. Most of the wells are in good repair; they should however have strong pumps placed in them and their outlets covered over.

Shwè-gyeen escaped both Cholera and Small Pox. Credit due to the Deputy Commissioner and Medical Officer.

282. Shwè-gyeen escaped Cholera altogether during the year. In paragraph 76, I have recorded how Small Pox, which the inoculators were conveying about the valley from village to village was kept out of this large and important town. Both the Deputy Commissioner and Mr. Cooper deserve the highest praise for the great success which attended the measures they took to prevent the introduction of the disease into Shwè-gyeen.

Death rate 16 per 1000. Extraordinary improvement in the Public Health accounted for by increased sanitation.

283. The death rate at Shwè-gyeen has considerably decreased. For 1869, the mortality was 16 per 1000. It is surprising to notice the smallness of this rate. From year to year it is becoming smaller and more beautifully less, and although, I have visited this station twice since my last report, I cannot account for it in any other way than by extreme healthfulness following on improved sanitation.

284. Although the vaccine department is not under me, when addressing the Deputy Commissioner on the subject of Small Pox in the Sub-division I recommended that an Assistant Vaccinator should be sent to Sittoung itself to render assistance. This was acted upon, and Native Doctor Akbar Khan was despatched to that station. I must say in his favour that he was of the greatest service and performed much good. I was an active witness to his exertions in treating all afflicted with Small Pox, and I believe that he did his utmost to spread the blessings of vaccination among the people.

Small Pox at Sittoung. Native Doctor Akbar Khan sent to render aid from Shwé-gyeen. This subordinate officer treated the sick and did much good in establishing vaccination.

285. I understand that considerable sanitary improvements are under contemplation for the town of Shwè-gyeen. At present it would be premature to notice them here, nothing having been definitely settled. It is sufficient to state for the present that what is thought necessary is based on sound conclusions.

Important sanitary works suggested for Shwé-gyeen still under consideration; they will be noticed hereafter.

286. TAVOY:—The Public Health in this town has been good during the year. Small Pox was introduced from Mergui in the month of November. It caused 108 deaths. 5 fatal cases of Cholera were registered in the twelve months which are described as sporadic, but unfortunately no dates are given. Thus the link is lost of the spread of the disease from the Maulmain to the Mergui district. No trouble has been taken to trace the progress of Cholera through this district.

Public Health good. Epidemic Small Pox visited the station in November. It was introduced from Mergui; deaths 108. Progress of Cholera not noticed.

287. The water supply is very defective in the town. The wells are not in good repair as a rule. I have already drawn attention to this matter.

Water supply defective. Wells in disrepair.

288. The two Bazaars in Tavoy are wretched buildings. I described their condition &c., in my special report on this town, but I am sorry to say that nothing has been done to remedy matters in the twelve months.

Tavoy Bazaars. Nothing has been done to improve them during the year.

289. Mr. Paul reports that animals are killed and dressed in the town itself. This is a breach of local rules and should be put a stop to at once. If there are not a

Animals killed in the town. Slaughter house not required. A suitable place for killing must be set apart in the suburbs.

sufficient number of animals slaughtered to require a Slaughter house, some suitable locality in the suburbs at any rate, should be set apart where the few that are killed may be dispatched and dressed in a proper manner.

Recommends that the new Grave yard rules in force in Pegu be extended to the Tenasserim division.

290. I have recommended that the new Grave yard rules now in force in Pegu may be extended to the Tenasserim division. They are simple and do not meddle with the prejudices of the people.

Prisoners employed on Conservancy. Town kept tolerably clean.

291. The conservancy of the town is attended to by a few prisoners. Some improvement has taken place in general cleanliness.

Mr. Paul in Medical Charge of Tavoy in sanitation has done good service. He has been well supported by Colonel Faithfull, the Deputy Commissioner.

292. Mr. Paul the Medical Officer in charge of Tavoy is an active Sanitary Officer and has done good service during the year. He states that he has received every support from the Deputy Commissioner, Colonel Faithfull, and that all his recommendations have been readily carried out.

Temperature and Rainfall.

293. MERGUI.—The rainfall and Thermometrical observations for the year are shewn as under :—

| RAINFALL. | | | Average temperature in the shade. | | | | | | | | | Prevailing winds. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | May. | | | July. | | | December. | | | | | |
| Jany. to May. | June to Sept. | Oct. to Decr. | Sunrise. | 2 p. m. | Sunset. | Sunrise. | 2 p. m. | Sunset. | Sunrise. | 2 p. m. | Sunset. | Jany. to May. | June to Sept. | Octr. to Decr. |
| 21.3 | 130.2 | 13.5 | 76 | 86 | 82 | 76 | 80 | 76 | 69 | 80 | 71 | N. E. & E. | S. S. W. | S. E. N. E. & E. |

Rainfall, fair average in quantity or 165 inches. Crops good and abundant.

294. The rainfall amounted to 165 inches. Only 13 inches fell in May against 36 in the corresponding month of 1868. The crops were good and abundant.

295. The drainage of the town has been attended to as much as possible during the year. There is a tidal creek to the south of the town and in this direction it is very difficult to drain properly. Again in those portions of the town occupying the lower levels, Dr. Foster, the Civil Surgeon says that the drains "continue in a most unsatisfactory condition. From the proximity of the wells to these drains they are during the fine weather nothing more than cesspools. The only remedy will be that these drains be made pucka, and a greater outfall given."

Drainage of town has been attended to as much as possible. It is defective to the south and in the lower levels.

296. The conservancy of Mergui is attended to by convict labor. Dr. Foster considers that the present gang is sufficient; he however would wish the department placed under himself as Ex: Officio Sanitary Officer. To all intents and purposes it is under him now. He has merely to point out to the Magistrate what he requires to be done and it should be looked to at once. I am not prepared to recommend any change therefore in the existing system which works admirably everywhere else.

Convicts are employed in the town. Dr. Foster desires that the Conservancy gang may be placed under him.

297. Drinking water in Mergui is obtained from wells which are numerous. Dr. Foster reports the quality to be good; they are however as a rule badly constructed. Dr. Foster says "Improvements in the upper works are highly desirable, at present the greater number have but wooden parapets and floors. This permits a great portion of the water used in bathing to return into the wells," * * "two new wells of good construction have however been sunk." Now in the month of May, Cholera being present in the town, I wrote in letter No. 44, to the Civil Surgeon, paragraph 2 that, "I do not think that the water supply of Mergui has received that care which might be bestowed upon it: Many of the wells are situated in low places, and contain brackish water, in my opinion unfit for use. I would therefore suggest that wells be sunk in the higher laterite soil and away from all buildings. They should be constructed of brick set in hydraulic cement with good parapet walls, surrounded by sloping platforms and circular drains to carry off the waste water. All the masonry at the outlets should be covered with cement to prevent percolation back into the wells." I am aware that a few doubtful wells

Water supply obtained from wells. Civil Surgeon reports quality good. Sanitary Commissioner does not agree with him. Instructions contained in letter No. 44, dated 22nd May 1869, not attended to.

were closed but no attention whatever would appear, from what Dr. Foster says, to have been paid to my instructions in other respects. No wonder that Cholera continued to prevail when people were allowed to bath alongside the town wells and "a great portion of the water used" returned into them again. It is inexplicable to me that, with such a serious sanitary evil staring one in the face, and after my ample instructions on the subject for an improved water supply, nothing should have been done to remedy it. Really a Sanitary Commissioner is of very little use if this is the way his advice is to be ignored.

Cholera in the Town and District of Mergui. Date of first cases in both situations. Dr. Foster believes that the disease was spontaneous.

298. Cholera appeared in the town of Mergui in the month of February, the date of the first case being given as the 26th of that month. The disease was reported from the district at the same time. In the Cholera map however which accompanies Dr. Foster's report the first case is entered as having taken place at a village to the east of Mergui called Kahan, on the 25th of February, and the second is recorded in the village of Engapone, some thirty miles to the north of the Head Quarters station on the 27th following. The advent and spread of the disease could not be accounted for. Dr. Foster thinks that its origin was "spontaneous."

The outbreak at Toungoo believed to have travelled south and expended itself in Mergui. Dr. Foster would seem to support this view.

299. This outbreak was undoubtedly the same disease as that seen at Toungoo, Hpagat, Kadoe, Maulmain, Amherst, Yea, Tavoy and in the hills to the East. The dates of progress show distinctly that it was travelling south. In another part of this report, I mentioned that the Eastward Cholera expended itself or rather died out in the Mergui District. Dr. Foster supports this view; he says "In February last 6 deaths took place in the town, but in March the disease gained firmer ground, the mortality rising rapidly. In April the disease had more the appearance of true Cholera, this type however did not prevail long and until the cessation of the disease in September its character was more that, known as Choleraic Diarrhœa." And I may add very probably kept up by the polluted well water.

Dr. Foster was unable to trace the course of the disease.

300. Cholera ceased entirely in the Mergui District in the month of September. Dr. Foster thinks that the course of the disease could not be traced in any way and he attributes the outbreak to some "grand climatic state of

the atmosphere " to inferior " fruits and vegetables " and to " fear."

Deaths from Cholera 181 or 19 per 1000 of total supposed strength of population Mergui not visited by Cholera for 10 years.

301. The deaths from Cholera were 181 or 19 per thousand of the supposed strength of the population. It is said that the disease had not been witnessed in Mergui for " ten years previous to the late outbreak."

Small Pox introduced from Rangoon in February and March. In December it had nearly died out. Mortality 29. 72 per mille.

302. Small Pox is said to have been introduced from Rangoon in February and March. The disease spread to the town in " May and gradually increased until it reached the maximum in October, during which month 124 deaths took place. In December the disease showed signs of dying out, more for want of subjects to attack than for any other reason." The disease was kept up by inoculation. The death rate from Small Pox is given as 29.72 per mille.

Small Pox is spread by inoculators, who receive from 8 annas to 3 and 4 Rupees per case.

303. It is impossible to prevent these periodical outbreaks of Small Pox in British Burma in the absence of efficient vaccination. The disease is more often spread from one part of the country to another by the inoculators than by any other means, men who derive a large trade in Small Pox virus. They obtain for handling this disgusting poison and performing the operation, from 8 annas to three and four rupees per case.

Dr. Foster complains that no vaccine lymph was forwarded to him until late in the year. Reasons for the probable non-receipt of supplies. Sanitary Commissioner requests enquiries may be made as to what became of the supplies forwarded by him on the 24th November and 13th December as no acknowledgment has been given of their receipt.

304. In paragraph 16 of his report, Dr. Foster complains that he was not furnished with vaccine lymph so early as he wished. The vaccine department is not, and was not, under me, but in justice to all concerned and to myself in particular, I desire to record these remarks. First, regular communication with Mergui takes place once a month only from Maulmain, but as the steamer *Defiance* which performs the postal service is not apparently guided in her movements by the departure of the Rangoon mails, opportunities of sending letters and packages are frequently lost, thus a detention of two months at a stretch may occur. Secondly, Dr. Foster says that he applied for vaccine lymph in the month of September and did not receive a supply until the 9th of December; tubes and crusts of this prophylactic are not usually received here from the Presidencies earlier than about the end of October, because it has been found utterly useless to perform the operation of vaccination with such lymph in

British Burma in the rains,—this together with the fact that the Mergui Steamer may have left before the arrival of the Rangoon mail, which is often the case, probably accounts for the delay or non receipt of virus at Mergui until a late date. Thirdly, and lastly, I forwarded lymph (3 points) myself to Dr. Foster, together with letter No. 130, dated 24th of November.—(date of despatch to Post office 24th November 1869.) As no acknowledgment of this fact is given in his report, I presume, that he never received the letter. Yet, again, with letter No. 147, dated 13th December,—I forwarded a fresh supply (3 tubes) to him through the Deputy Commissioner of Mergui—(date of despatch to Post office 13th December,)—this fact too remains unnoticed; and as Dr. Foster seems to infer that some one is to blame for neglect in not sending him supplies, I request that an enquiry may be made as to what became of my two letters and lymph, forwarded to him on the respective dates mentioned.

The Bazaars erected for fruit, vegetables and fish only. The building is kept clean and in excellent order. It is admirably adapted for its purpose.

305. The Bazaar at Mergui is for fruit, vegetables and fish. Butchers meat or venison is rarely exposed for sale. The building is situated on the beach, it is well built and admirably adapted for the purpose intended. This institution is kept clean and in nice order.

Grave yards in a satisfactory condition.

306. As to the grave yards Dr. Foster says "their condition is most satisfactory."

The Mergui Public latrines are well situated and properly looked after. Additional ones are to be built.

307. The public latrines, four in number, at the time of my inspection were in good order and worked well. Dr. Foster thinks that several more are required. I know this is Captain Shepherd's, Deputy Commissioner, opinion also, and he only awaits the accumulation of funds to have additional ones erected.

Captain Shepherd, the Deputy Commissioner praises Dr. Foster for his activity and energy during Cholera and Small Pox Epidemics. Sanitary Commissioner entirely concurs &c.

308. In forwarding letter No. 2 dated Mergui the 1st January, Captain Shepherd, the Deputy Commissioner, says that, "Dr. Foster deserves great credit for the activity and energy he has shewn during the past year, when Cholera and Small Pox prevailed." I most cordially agree in this well merited praise. Dr. Foster has had a most trying twelve months of hard work to contend with, and he has performed his duties cheerfully and well. The Cholera map forwarded to me by this officer has been put together with great care. It is intelligible and nicely drawn.

## A FEW CONCLUDING REMARKS.

Captain Plant recommends that the Sanitary Commissioner should be granted the expenditure of money for sanitary improvements without sufficient reasons. Sanitary Commissioner considers that Captain Plant should spend what monies he has before asking for more.

309. Captain Plant, the Deputy Commissioner of Myanoung, in his "remarks" on Mr. Godbier's Sanitary Report, in the last paragraph records his opinion in the following words. "A fixed Budget provision should be made to the Sanitary Commissioner so as to enable him to place Officers in funds to carry out his orders without which little can be done." Such a statement as this coming from an officer in Captain Plant's position, might justly be taken to infer that I had asked him to perform certain duties which he found it impossible to accomplish for the want of funds. Facts, however do not confirm this presumption. I cannot call to mind the occasion on which I requested Captain Plant to effect sanitary reforms in any of the towns under him, when the means at his disposal were not amply sufficient to cover their cost. His opinion carries with it the charge of an act of such palpable absurdity on my part, that I cannot permit myself for one moment to think it possible I could be capable of committing. It is distinctly negatived by the state of the Municipal funds under Captain Plant in the Tharrawaddy District, viz., in Kyangheen, Kanoung, Henzadah, Donabew, Yeagheen and Zaloon (a new Bazaar has recently been completed in Myanoung and this fund is just now in debt) as published by the Accountant General of British Burma, all of which shewed at the expiration of the year 1868-69 a large amount to credit unexpended.

List of towns from which municipal taxes are collected, total income, expenditure and balance in hand on 1st April 1869.

310. I now give the income, expenditure and balance in hand of 37 (or nearly all) Municipal funds as the accounts stood on the 1st April 1869. The aggregate cash, after paying all expenses, available therefore to carry out my recommendations and other needed improvements during the year was about—Rupees 3,93,701. In all my suggestions to District Officers for healthful reforms, I have invariably been guided by the amounts to credit of the towns and districts under their respective charges, especially reserved for sanitary objects: I will go further and say that, I have never yet been guilty of the monstrous imputation of requesting local officers to expend what they had not got. When I deem it advisable to bring to the notice of the Administration

radical changes requiring an outlay beyond the powers of local funds to meet, I do so, and the subject is considered in its proper department.

311. I consult the local Government in all matters of this description and Colonel Fraser, the Chief Engineer, invariably carries out my suggestions whenever he can. All structural works are considered by the Government in the Department Public Works. It is for me to suggest what I think is required to be done for the improved health of the country, but it is not for me to indicate the modes by which this end may be best attained. In certain districts, and under the actual circumstances of the country it may be necessary to recommend an expenditure beyond income, I say it may be so sometimes, but it is not so always. The sums raised for special sanitary purposes I find sufficient; at any rate, as the accounts now stand they exhibit a surplus which local officers would appear to find it difficult to get through. It is not my wish to blame Captain Plant especially for joining in the cry, so generally uttered, of "no money," when the facts prove quite an opposite condition of affairs; but what I do find fault with is this, that the miserable insanitary condition of things existing in many towns which it is expected local officers, aided by the advice of the Sanitary Commissioner, will contend with successfully, are neglected, because they will not make the required Budget provision for the judicious laying out of the money available and thus ensure success.

312. Table showing the Towns in which there are Municipal, Town and Land Sale and Rent Funds with credit balances on 1st April 1869, as published by the Accountant General of British Burma.

ARAKAN DIVISION.

| TOWNS. | Income. | | | Expenditure. | | | Balance in hand 1st April 1869. | | |
|---|---|---|---|---|---|---|---|---|---|
| | RS. | A. | P. | RS. | A. | P. | RS. | A. | |
| Akyab* . . . | 57,331 | 6 | 11 | 19,358 | 14 | 9 | 37,972 | 8 | 2 |
| Aeng . . . . | 573 | 5 | 8 | 185 | 8 | 8 | 387 | 13 | 0 |
| Kyouk-Phyoo . | 14,173 | 6 | 9 | 2,061 | 9 | 0 | 12,111 | 13 | 9 |
| Ramree . . . | 7,287 | 7 | 6 | 4,167 | 6 | 0 | 3,120 | 1 | 6 |
| Sandoway. . . | 6,853 | 0 | 2 | 733 | 1 | 5 | 6,119 | 14 | 9 |
| TOTAL Rs ... | 86,218 | 11 | 0 | 26,506 | 7 | 10 | 59,712 | 3 | 2 |

* Land Sale and Rent Fund not included in the amount given in page 97, paragraph 191.

## PEGU DIVISION.

| TOWNS. | Income. | | | Expenditure. | | | Balance in hand 1st April 1869. | | |
|---|---|---|---|---|---|---|---|---|---|
| Yandoon . . . | 16,449 | 5 | 9 | 1,966 | 11 | 3 | 14,482 | 10 | 6 |
| Pegu . . . . | 6,986 | 5 | 2 | 1,317 | 14 | 10 | 5,668 | 6 | 4 |
| Kuttiah . . . | 420 | 5 | 9 | 205 | 15 | 8 | 214 | 6 | 1 |
| Toungoo . . . | 55,045 | 3 | 3 | 17,268 | 2 | 2 | 37,777 | 1 | 1 |
| Kanoung . . . | 3,132 | 3 | 9 | 887 | 0 | 0 | 2,245 | 3 | 9 |
| Henzada . . . | 52,370 | 1 | 7 | 16,120 | 1 | 2 | 36,250 | 0 | 5 |
| Donabew . . . | 2,296 | 6 | 11 | 825 | 4 | 2 | 1,471 | 2 | 9 |
| Yeagheen . . | 2,325 | 10 | 9 | 1,181 | 12 | 9 | 1,143 | 14 | 0 |
| Dounyee . . | 2,726 | 10 | 6 | 638 | 0 | 8 | 2,088 | 9 | 10 |
| Leymiethna . | 13,938 | 14 | 2 | 1,878 | 4 | 2 | 12,060 | 10 | 0 |
| Ngathoung-Kyoung | 15,157 | 15 | 4 | 5,124 | 2 | 7 | 10,033 | 12 | 9 |
| Pandau . . . | 7,267 | 0 | 3 | 1,184 | 8 | 10 | 6,082 | 7 | 5 |
| Pantanau . . | 14,254 | 0 | 5 | 1,767 | 9 | 8 | 12,486 | 6 | 9 |
| Kama . . . . | 368 | 7 | 0 | 12 | 5 | 11 | 356 | 1 | 1 |
| Myawaddy . . | 474 | 3 | 5 | 12 | 10 | 1 | 461 | 9 | 4 |
| Prome . . . | 1,19,447 | 2 | 2 | 37,201 | 1 | 1 | 82,246 | 1 | 1 |
| Poungday - - | 9,279 | 4 | 0 | 2,179 | 2 | 5 | 7,100 | 1 | 7 |
| Shwè-doung - - | 27,459 | 1 | 8 | 10,410 | 10 | 2 | 17,048 | 7 | 6 |
| Thayetmyo - - - | 28,851 | 15 | 6 | 23,257 | 13 | 5 | 5,594 | 2 | 1 |
| TOTAL ... | 3,78,250 | 5 | 4 | 1,23,439 | 3 | 0 | 2,54,811 | 2 | 4 |

## TENASSERIM DIVISION.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Amherst . . . | 184 | 8 | 0 | 153 | 11 | 2 | 30 | 12 | 10 |
| Kawkareit . . | 1,446 | 11 | 5 | 297 | 9 | 8 | 1,149 | 1 | 9 |
| Martaban . . . | 534 | 8 | 0 | 28 | 4 | 5 | 506 | 3 | 7 |
| Thatone . . . | 2,101 | 0 | 2 | 497 | 6 | 4 | 1,603 | 9 | 10 |
| Yea-myo . . . | 250 | 0 | 0 | 2 | 12 | 0 | 247 | 4 | 0 |
| Beeling. . . | 5,959 | 7 | 9 | 494 | 5 | 8 | 5,465 | 2 | 1 |
| Kyouk-kyee . | 6,439 | 6 | 10 | 332 | 1 | 8 | 6,107 | 5 | 2 |
| Kyketto . . | 8,924 | 8 | 11 | 1,339 | 11 | 2 | 7,584 | 13 | 9 |
| Shwè-gyeen . . | 31,434 | 8 | 8 | 7,149 | 4 | 4 | 24,285 | 4 | 4 |
| Sittoung . . | 7,746 | 8 | 8 | 1,400 | 9 | 2 | 6,342 | 15 | 6 |
| Wimbadaw . . | 2,075 | 0 | 11 | 1,326 | 11 | 2 | 748 | 5 | 9 |
| Mergui . . | 9,440 | 4 | 7 | 7,308 | 12 | 0 | 2,131 | 8 | 7 |
| Tavoy . . . . | 38,559 | 8 | 11 | 15,583 | 8 | 5 | 22,976 | 0 | 6 |
| TOTAL.. | 1,15,093 | 2 | 10 | 35,914 | 11 | 2 | 79,178 | 7 | 8 |
| GRAND TOTAL... | 5,79,562 | 3 | 2 | 1,85,860 | 6 | 0 | 3,93,701 | 13 | 2 |

313. In Myanoung there is one fund which is in debt and that is the Bazaar fund. A beautiful new building has just been completed and it is already paying over 6½ per cent on the original outlay. Moreover, Captain Plant finds that he will have to build additional stalls for meat and fish. But it is waste of time to pursue this subject any further; I have said so much about the profitableness of Public Markets. That they are sanitary works of the first magnitude cannot be for one moment disputed. Myanoung will very quickly be quite clear of this debt and the receipts will then swell very considerably the Municipal funds.

Bazaar Fund only in debt in Myanoung. New Institution already paying over 6½ per. cent. Additional stalls again required.

314. The state of the Municipal funds under Captain Plant save in Myanoung, which is temporarily in debt, money having been borrowed from the other funds to build the new bazaar with—certainly do not necessitate or support the opinion he has offered to this Administration. It is needless to remark that I in no way whatever concur in his recommendation.

Sanitary Commissioner not only does not concur with Captain Plant, but considers his opinion a hastily expressed one.

# PART II.

# VITAL STATISTICS.

# PART II.

## BIRTHS AND DEATHS 1869.

Reports and Returns.

1. The Reports and Returns received on the registration of Births and Deaths for the year 1869, are as follows :—

### ARAKAN DIVISION.

#### AKYAB.

1. Magistrate's Returns—Four.

#### KYOUK-PHYOO.

2. Deputy Commissioner's Report.
3. do. do. Returns—Four.
4. Medical Officer's Report.

#### SANDOWAY.

5. Deputy Commissioner's Forwarding Letter.
6. do. do. Returns—Four.
7. Medical Officer's Report.

### PEGU DIVISION.

#### RANGOON.

8. Magistrate's Remarks on the Civil Surgeon's Report.
9. Magistrate's Returns—Four.
10. Civil Surgeon's Report.

#### BASSEIN.

11. Deputy Commissioner's Forwarding Letter.
12. do. do. Returns—Four.
13. Civil Surgeon's Report.

#### MYANOUNG, HENZADAH, KYANGHEEN AND ZALOON.

14. Deputy Commissioner's Remarks.
15. do. do. Returns—Sixteen.
16. Medical Officer's Report.

#### PROME.

17. Deputy Commissioner's Report.
18. do. do. Returns—Four.
19. Medical Officer's Report.

#### SHWE-DOUNG.

20. Deputy Commissioner's Returns—Four.
21. Medical Officer's Report.

THAYETMYO.

22. Assistant Commissioner's Report.
23. do. do. Returns—Four.
24. Civil Surgeon's Report.

TOUNGOO.

25. Deputy Commissioner's Remarks.
26. do. do. Returns—Four.
27. Civil Surgeon's Report.

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TENASSERIM DIVISION.

MAULMAIN.

28. Magistrate's Forwarding Letter.
29. do. Returns—Four.
30. Civil Surgeon's Report.

TAVOY.

31. Deputy Commissioner's Forwarding Letter.
32. do. do. Returns—Four.
33. Medical Officer's Report.
34. do. do. Returns—Four.

MERGUI.

35. Civil Surgeon's Report.
36. do. do. Returns—Four.

SHWE-GYEEN.

37. Deputy Commissioner's Forwarding Letter.
38. do. do. Returns—Four.
39. Medical Officer's Report.

The new system of Registration Returns not yet sanctioned.

2. The new system of Registration has not yet been sanctioned, consequently no alteration has been made in the Returns of the Province in the year. In my last Annual Report (see page 44 para. 22), I shewed how easily the new returns recommended by the Sanitary Commissioner with the Government of India could be made up from our existing registers; and I only await therefore the orders of the Administration to effect the change at once.

The Sanitary Commissioner was not responsible for the incorrectness of the Registration Returns for 1868. He did send uniform and complete sets of Returns to every Registrar throughout the Province.

3. At page VIII of the Chief Commissioner's Memorandum on my Annual Report for 1868, it is said in the 2nd para. "District Officers also do not appear to have been supplied with correct forms of Registration." This is entirely an error. Every Magisterial and Civil Medical Officer was furnished with *duplicate* sets of uni-

form printed forms of Registration. These forms were printed in the Rangoon Central Prison and distributed in the month of March and again in April 1869.

District Returns were not sent back to the responsible Officers for revision on account of the delay in the submission of the Annual Health Report which thereby would have been occasioned.

4. The Chief Commissioner also expresses a hope that he may "see more accurate results given in next year's report." This attaches some blame to myself when I am not in any way responsible. It was thought better to accept the returns submitted for 1868, although not accurately drawn up by District Officers, because, after the District Annual Returns had been put together for the official year 1868-69, orders were received in my office in the month of April to review the Public Health and Vital Statistics for the calendar year 1868 only. This, as I explained in the opening paragraph of my report, necessitated the submission of fresh returns and reports by all Civil Medical Officers throughout the Province, and had their papers been again sent back to them for revision, it would be difficult to say when the Annual Health Report itself would have been completed.

Every effort has been made by the Sanitary Commissioner to induce District Officers to submit correct returns. The errors committed this year are set forth for the information of the Chief Commissioner.

5. Every effort on my part has been made to induce responsible Officers to submit accurate returns, but to shew how hard a matter it is to ensure this, or even to induce them to examine their work before forwarding the figures to me, I will here place on record the careless manner in which, in the first instance, the registration papers were sent to my Office this year. The returns for each town are four in number, viz:—

(A).—Exhibits the Births during the year.

(B).—Exhibits the Deaths according to race.

(C).—Exhibits the Deaths from all causes according to Race.

(D).—Exhibits the Deaths at various ages among the several classes.

Uniform duplicate printed sets of these four returns were again forwarded to all Magisterial and Civil Medical Officers in the Province in the month of November 1869. Of course when filled up their respective grand totals for each separate town in which registration is carried on should agree. At any rate the figures in each column should be totalled correctly. Let us see how beautifully this most simple duty has been

performed. I have, I must admit, hitherto screened Officers from blame for their gross errors at considerable trouble to myself. My kindness however has been misplaced and now they must answer for themselves.

AKYAB:—The Magistrate in Form C. gives the total deaths from Cholera in the town as 287, whereas it should be 570.

BASSEIN:—Total deaths among the Burmese incorrectly entered and added. Form signed by the Deputy Commissioner.

TOUNGOO:—Form B. does not agree with forms C. and D. Grand totals all wrong. Forms signed by the Deputy Commissioner.

MAULMAIN:—Forms B. C. and D. do not agree. Totals incorrectly entered and added. Signed by the Magistrate.

SHWE-GYEEN:—Forms B. C. and D. do not agree. Totals incorrectly entered and added. Signed by the Civil Medical Officer.

Nomenclature of diseases followed according to Sanitary Commissioner's suggestions.

6. The nomenclature of diseases adopted in the returns this year is in accordance with that suggested by the Sanitary Commissioner with the Government of India, as under :—

| | |
|---|---|
| 1. Fever | 6. Wounding |
| 2. Cholera | 7. Accident |
| 3. Small Pox | 8. Snake bites or killed by wild beasts |
| 4. Bowel Complaints | 9. All other causes. |
| 5. Suicide | |

Total Births and Deaths in the year 1869.

7. The total number of Deaths recorded in the chief towns during the year 1869, was 9,369. The Births registered in the same period were 9,563.

| | | *Births.* | *Deaths.* |
|---|---|---|---|
| 1. | Akyab | 675 | 1164 |
| 2. | Kyouk-Phyoo | 68 | 93 |
| 3. | Sandoway | 106 | 69 |
| 4. | Rangoon | 1418 | 1754 |
| 5. | Bassein | 810 | 641 |
| 6. | Myanoung | 221 | 166 |
| 7. | Henzadah | 938 | 413 |
| 8. | Kyangheen | 285 | 161 |

| | | Births. | Deaths. |
|---|---|---|---|
| 9. | Zaloon | 179 | 135 |
| 10. | Prome | 1585 | 1594 |
| 11. | Shwè-doung | 617 | 397 |
| 12. | Thayetmyo | 401 | 303 |
| 13. | Toungoo | 422 | 332 |
| 14. | Maulmain | 1031 | 1022 |
| 15. | Tavoy | 339 | 390 |
| 16. | Mergui | 333 | 620 |
| 17. | Shwè-gyeen | 135 | 115 |

Total Births and Deaths according to sex.

8. The following tables shew the total Births and Deaths according to sex, as registered in each of the seventeen towns in the three Divisions of British Burma during the year 1869.

| | Births. | M. | F. | Total. |
|---|---|---|---|---|
| ARAKAN | Akyab... | 360 | 315 | 675 |
| | Kyouk-Phyoo | 42 | 26 | 68 |
| | Sandoway... | 63 | 43 | 106 |
| | Total..... | 465 | 384 | 849 |
| PEGU. | Rangoon... | 780 | 638 | 1418 |
| | Bassein... | 423 | 387 | 810 |
| | Myanoung... | 100 | 121 | 221 |
| | Henzadah... | 489 | 449 | 938 |
| | Kyangheen... | 135 | 150 | 285 |
| | Zaloon... | 91 | 88 | 179 |
| | Prome... | 854 | 731 | 1585 |
| | Shwè-doung... | 304 | 313 | 617 |
| | Thayetmyo..... | 219 | 182 | 401 |
| | Toungoo... | 193 | 229 | 422 |
| | Total..... | 3588 | 3288 | 6876 |
| TENASSERIM. | Maulmian .. | 506 | 525 | 1031 |
| | Tavoy... | 188 | 151 | 339 |
| | Mergui... | 176 | 157 | 333 |
| | Shwè-gyeen... | 69 | 66 | 135 |
| | Total..... | 939 | 899 | 1838 |
| | Grand Total..... | 4992 | 4571 | 9563 |

| | Deaths. | M. | F. | Total. |
|---|---|---|---|---|
| ARAKAN | Akyab... ... ... ... ... ... ... ... | 743 | 421 | 1164 |
| | Kyouk-Phyoo... ... ... ... ... ... | 59 | 14 | 93 |
| | Sandoway... ... ... ... ... ... ... | 41 | 28 | 69 |
| | Total..... | 843 | 483 | 1326 |
| PEGU. | Rangoon... ... ... ... ... ... ... | 1057 | 697 | 1754 |
| | Bassein... ... ... ... ... | 364 | 277 | 641 |
| | Myanoung... ... ... ... ... | 95 | 71 | 166 |
| | Henzadah... ... ... ... ... | 207 | 206 | 413 |
| | Kyangheen... ... ... ... ... | 78 | 83 | 161 |
| | Zalooh... ... ... ... ... | 71 | 64 | 135 |
| | Prome... ... ... ... ... | 881 | 713 | 1594 |
| | Shwè-doung... ... ... ... ... ... | 213 | 184 | 397 |
| | Thayetmyo.... ... ... ... ... | 149 | 154 | 303 |
| | Toungoo... ... ... ... ... | 184 | 148 | 332 |
| | Total..... | 3299 | 2597 | 5896 |
| TENASSERIM. | Maulmain | 657 | 365 | 1022 |
| | Tavoy | 190 | 200 | 390 |
| | Mergui | 352 | 268 | 620 |
| | Shwè-gyeen | 50 | 65 | 115 |
| | Total..... | 1249 | 898 | 2147 |
| | Grand Total..... | 5391 | 3968 | 9360 |

9. A comparison of these returns with those for 1868, give the following results :—

Results of comparison of the Returns for 1869 with those for 1868.

BIRTHS.

| | 1868. | | 1869. | |
|---|---|---|---|---|
| | *Males.* | *Females.* | *Males.* | *Females.* |
| Arakan | 507 | 419 | 465 | 384 |
| Pegu | 3490 | 3122 | 3588 | 3288 |
| Tenasserim | 923 | 839 | 939 | 899 |
| Total | 4920 | 4380 | 4992 | 4571 |

DEATHS.

| | 1868. | | 1869. | |
|---|---|---|---|---|
| | *Males.* | *Females.* | *Males.* | *Females.* |
| Arakan | 413 | 302 | 843 | 483 |
| Pegu | 3118 | 2528 | 3299 | 2597 |
| Tenasserim | 875 | 659 | 1249 | 898 |
| Total | 4406 | 3489 | 5391 | 3978 |

Increase of Births and Deaths in urban population.

Thus in the three Divisions there was an increase in the Births in 1869 over 1868, of only 263; while the deaths exceeded those of the previous year by 1474. The towns in which this increase took place will be seen in the following table:—

| TOWNS. | Population. | Births. | Deaths. | Increase. | Decrease. | Ratio of Births per 1000. | Ratio of Deaths per 1000. |
|---|---|---|---|---|---|---|---|
| Akyab ... ... | 16136 | 675 | 1164 | 0 | 106 | 41·2 | 72·1 |
| Kyouk-Phyoo. | 3654 | 68 | 93 | 0 | 25 | 16·6 | 25·4 |
| Sandoway ... | 2376 | 106 | 69 | 37 | 0 | 44·6 | 29·0 |
| Rangoon ... | 88677 | 1418 | 1754 | 0 | 336 | 15·9 | 19·7 |
| Bassein ... ... | 20111 | 810 | 641 | 169 | 0 | 40·2 | 31·8 |
| Myanoung ... | 6074 | 221 | 166 | 55 | 0 | 36·3 | 27·3 |
| Henzadah ... | 14624 | 938 | 413 | 525 | 0 | 64·1 | 28·2 |
| Kyangheen ... | 8637 | 285 | 161 | 124 | 0 | 32·8 | 18·6 |
| Zaloon ... ... | 4597 | 179 | 135 | 44 | 0 | 38·9 | 29·3 |
| Prome ... ... | 24616 | 1585 | 1594 | 0 | 9 | 64·4 | 64·7 |
| Shwè-doung ... | 10439 | 617 | 697 | 230 | 0 | 59·1 | 38·0 |
| Thayetmyo ... | 8607 | 401 | 303 | 98 | 0 | 46·5 | 43·8 |
| Toungoo ... | 11466 | 422 | 332 | 90 | 0 | 36·8 | 28·9 |
| Maulmain ... | 71534 | 1031 | 1022 | 9 | 0 | 14·4 | 14·2 |
| Tavoy ... ... | 14509 | 339 | 390 | 0 | 51 | 23·3 | 26·8 |
| Mergui ... ... | 9488 | 333 | 620 | 0 | 287 | 35·0 | 65·3 |
| Shwè-Gyeen . | 7183 | 135 | 115 | 20 | 0 | 18·7 | 16·0 |
| TOTAL ..... | 322,728 | 9,563 | 9,369 | 1,391 | 814 | 29·6 | 29.0 |

Increase of population in 11 towns, a falling off in 6

10. The total population given for the 17 towns last year was 295,229; this year it is set down at 322,728, or exhibiting an in-

crease of 27,499. An actual increment is given in 11 towns, whereas 6 shew a falling off. Amongst the latter Prome and Toungoo are numbered which appears somewhat unaccountable, unless the Magistrates' boundaries of those stations have been reduced. The Birth and Death rates for the seventeen towns, are:—

| | | |
|---|---|---|
| Births... ... ... | 29·6 | per mille |
| Deaths ... ... ... | 29·0 | do. |

Millesimal Birth and Death rates for 1869, compared with those given for 1868. Birth rate considered too low, while the Death rate, if the mortality from Cholera and Small Pox be excluded, looked upon as a fair rate for British Burma.

11. Last year the Birth rate was 31·5 and the Death rate 26·4 per 1000 of total population. The Birth rate 29·6 for 1869, is much too low. This I hope to be able to account for as I proceed. The augmentation in the Death rate, or 2.6 is trifling, and if the mortality which took place during the year from Cholera and Small Pox in the towns of Prome, Mergui and elsewhere be excluded, the death rate is 22.4, or less by 3·0 than that for 1868, deducting in that year also the total mortality from the same diseases;—a very fair rate for British Burma, and which led me in the first part of the Health Report to record my opinion that, with the exception of these outbreaks of serious diseases, the Public Health during the year had been generally good.

Births ratio in certain towns are too favorable.

12. The Birth rates for the following towns I consider too favorable if the strength of their populations is correct, but undoubtedly in each case it has been under-estimated:—

| | | |
|---|---|---|
| Akyab ... ... ... | 41·2 | per mille |
| Sandoway ... ... | 44·6 | do |
| Bassein ... ... ... | 40·2 | do |
| Henzadah ... ... | 64·1 | do |
| Prome ... ... ... | 64·4 | do |
| Shwè-doung... ... | 59·1 | do |
| Thayetmyo ... ... | 46·5 | do. |

The rates given for:—

| | | |
|---|---|---|
| Kyouk-Phyoo... ... | 16·6 | per mille |
| Rangoon... ... ... | 15·9 | do |
| Maulmain ... ... | 14·4 | do |
| Shwé-gyeen ... ... | 18·7 | do |
| Tavoy ... ... ... | 23·3 | do. |

are again very low.

In 7 towns the Birth rate is satisfactory.

13. In the remaining towns the ratio of deaths is I think satisfactory, viz:—

| | | |
|---|---|---|
| Myanoung | ...36·3 | per mille |
| Kyangheen | ...32·8 | do |
| Zaloon | ...38·9 | do |
| Toungoo | ...36·8 | do |
| Mergui | ...35·0 | do. |

In Tavoy and Shwé-gyeen the rates are small but care has been taken in the Registration and the figures may be accepted.

14. Tavoy, 23·3 is small but care has been taken in the registration. Again, Shwè-gyeen, 18·7 although a very low rate, I know to be nearly correct; Mr. Cooper, the Civil Medical Officer in charge has sent me his returns disagreeing in their totals, but the errors are small ones and probably clerical only, I can in the main therefore accept his figures with confidence as being approximately reliable.

High death rates; causes for the same explained.

15. The death rates given for the undermentioned towns are too high. In several instances of course we are aware that the excess of mortality was due to epidemic diseases, but in other situations the increase is doubtless only apparent and should rather be placed to our ignorance of the actual strength of urban communities than to any unusual sickness:—

| | | |
|---|---|---|
| Akyab | ... 72·1 | per mille |
| Sandoway | ... 29·0 | do |
| Bassein | ... 31·8 | do |
| Myanoung | ...27·3 | do |
| Henzadah | ...28·2 | do |
| Zaloon | ...29·3 | do |
| Prome | ...64·7 | do |
| Shwè-doung | ... 38·0 | do |
| Thayetmyo | ... 43·8 | do |
| Toungoo | ...28·9 | do |
| Mergui | ...65·3 | do. |

In six towns the death rate is favorable. A census much needed.

16. The remaining towns exhibit fair death rates; in one or two perhaps a little too favorable. They are:—

| | | |
|---|---|---|
| Kyouk-Phyoo | ... 25.4 | per mille |
| Rangoon | ... 19.7 | do |
| Kyangheen | ... 18.6 | do |
| Maulmain | ... 14.2 | do |
| Tavoy | ... 26.8 | do |
| Shwè-gyeen | ... 16.0 | do. |

Our great want is a good census. An attempt in the previous year was made in Bassein to number the people, but a large section of the community was omitted by an oversight. This year the Magistrate in like manner tried to take a census of Rangoon, and we have seen in another part of this report, paragraph 210, how imperfect his returns must be. At present our strength of urban population is arbitrarily given in the registration returns; and I do not expect that, unless orders are issued by the Government, a numbering of the people will be attended with much success.

Return of causes of mortality. Nomenclature in accordance with Sanitary Commissioner's with the Government of India suggestions.

17. I now give an abstract return of the mortality which took place in our chief towns during the year. The nomenclature of diseases &c., is that furnished by the Sanitary Commissioner with the Government of India for the collection of vital statistics.

| Names of Towns. | Fevers. | Cholera. | Small Pox. | Bowel Complaints. | Suicide. | Wounding. | Accident. | Snake bite or killed by wild beasts. | All other causes. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| Akyab ... | 288 | 570 | 67 | 3 | 1 | 1 | 4 | 0 | 230 | 1164 |
| Kyouk-Phyoo ... | 50 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 93 |
| Sandoway ... | 27 | 0 | 0 | 9 | 0 | 0 | 1 | 0 | 32 | 69 |
| Rangoon ... | 779 | 2 | 170 | 67 | 6 | 5 | 13 | 3 | 709 | 1754 |
| Bassein ... | 73 | 37 | 0 | 69 | 1 | 1 | 1 | 1 | 458 | 641 |
| Myanoung ... | 28 | 15 | 0 | 0 | 0 | 3 | 0 | 0 | 120 | 166 |
| Henzadah ... | 99 | 13 | 7 | 0 | 0 | 0 | 0 | 0 | 294 | 413 |
| Kyangheen ... | 57 | 0 | 0 | 11 | 0 | 0 | 1 | 0 | 92 | 161 |
| Zaloon ... | 44 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 135 |
| Prome ... | 312 | 114 | 355 | 168 | 0 | 2 | 4 | 2 | 637 | 1594 |
| Shwè-doung ... | 68 | 5 | 16 | 46 | 0 | 0 | 1 | 2 | 259 | 397 |
| Thayetmyo ... | 69 | 34 | 2 | 3 | 1 | 1 | 1 | 0 | 192 | 303 |
| Toungoo ... | 72 | 0 | 17 | 38 | 1 | 0 | 18 | 0 | 186 | 332 |
| Maulmain ... | 269 | 29 | 12 | 169 | 2 | 7 | 25 | 1 | 508 | 1022 |
| Tavoy ... | 70 | 5 | 108 | 0 | 3 | 0 | 2 | 0 | 202 | 390 |
| Mergui ... | 48 | 181 | 282 | 26 | 3 | 2 | 1 | 0 | 77 | 620 |
| Shwè-Gyeen ... | 62 | 0 | 1 | 21 | 0 | 1 | 0 | 0 | 30 | 115 |
| Total..... | 2415 | 1025 | 1037 | 630 | 18 | 23 | 72 | 9 | 4140 | 9369 |

Comparison of abstract return of causes of deaths for 1869 with 1868, causes of excess of mortality shewn.

18. If we compare the present return with that furnished in my last Annual Report, it shews an increase of mortality in 11 towns. The principal causes of this increase will be readily observed in the following proportions per cent, on the strength of population for the two years :—

| | 1868. | 1869. |
|---|---|---|
| Cholera... ... ... | .06 | .32 |
| Small Pox... ... | .06 | .31 |
| Suicide... ... ... | .002 | .005 |
| Wounding... ... | .005 | .006 |

The deaths from "Accidents" and "Snake bites" &c., shew an increase of 11 and 2 respectively, compared with the actual number recorded in 1868. The percentage both years is the same owing to the augmentation of the population in 1869. It is most gratifying to observe how steady from year to year "Bowel Complaints" are becoming less and less fatal; the mortality under this heading gives a total of 630 for 1869 against 700 in 1868.

Return of Births and Deaths in the seventeen towns shewn according to race for 1869.

19. The following return of Births and Deaths for the whole seventeen towns in British Burma, in which registration is carried on, for 1869, is worthy of attention.

| RACES. | BIRTHS. | | DEATHS. | |
|---|---|---|---|---|
| | M. | F. | M. | F. |
| Burmese - - - - - - | 3970 | 3649 | 3670 | 3149 |
| Arakanese - - - - - | 302 | 263 | 490 | 345 |
| Karens - - - - - - | 3 | 2 | 16 | 3 |
| Shans - - - - - - | 69 | 60 | 88 | 48 |
| Chinese - - - - - - | 157 | 128 | 177 | 54 |
| Natives of India - - - - | 302 | 289 | 754 | 207 |
| Other Races - - - - - - - - | 189 | 180 | 196 | 172 |
| TOTAL... | 4992 | 4571 | 5391 | 3978 |
| GRAND TOTAL... | 9563 | | 9369 | |

Here we perceive that 399 males died more than were born during the year, while the births of females exceeded the

deaths by 593, or if we subtract the one from the other it shews that the increase by natural causes in the total population of the 17 towns was only 194, and that they were all females.

Birth rate inaccurate. Sanitary Commissioner desires greater attention on the part of Deputy Commissioners and Magisterial Officers to the supervision of the work of the Registrars.

20. From this it is evident that the Birth rate must be inaccurate. I have every reason to believe that the Deaths are faithfully registered, especially as sanction must always be obtained from the local authority, in each registration town prior to the burial of a body, for the performance of the usual funeral ceremony. It is difficult to conceal a dead body and the people have no object in hiding a death, but it may sometimes be otherwise with a birth. This might effect the returns, but knowing the Burmese as I do—a people without caste prejudices and who are ever ready to supply the Government with any information in regard to themselves, which may be required; a people who do not fear but respect and are happy under their present rulers;—I am satisfied in my own mind that, the real difficulty we have to contend with is not the unwillingness of the people to supply information, but the neglect of a proper supervision by District officers over Registration, and the want of due attention to their duties and the absence of interest in their work on the part of the native registrars. I am convinced that no trouble is taken to collect and register the number of Births—the duty is not performed as it should be but slovenly got through in most cases any how. The Deputy Commissioners and Magisterial Officers should be strictly enjoined to supervise the work of the Registrars with greater care.

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## ARAKAN DIVISION.

No Births and Deaths Reports received from Akyab for 1869. Both Magistrate and Civil Surgeon have neglected their duty.

21. AKYAB:—No Births and Deaths Report has been furnished from Akyab. Both the Magistrate and Civil Surgeon have neglected this duty. The former was written to by Memo. No. 219, dated 28th February, on this subject, and I telegraphed to the Civil Surgeon myself on the 8th April, requesting him to send his reports by return of steamer.

Population of Akyab increased in the year by 393 persons, but how obtained is not stated

22. The population of Akyab is set down at 16,136, which shews an increase of 393 persons on the previous year, but as the Deaths

exceeded the Births in the same period and no explanation is given of the manner in which these figures have been obtained, I presume that the increase is due to immigration.

| | | |
|---|---|---|
| The Birth rate is... | 41·2 | per mille |
| The Death rate ... | 72·1 | do. |

Cholera and Small Pox caused a large mortality, especially the former, but these figures are of course absurdly high and point out distinctly that the strength of population is under estimated.

The Death rate from

| | | |
|---|---|---|
| Cholera.. ... ... ... | 35·3 | per mille |
| Small Pox... ... ... | 4·15 | do |
| Fever... ... ... ... | 17·84 | do. |

These diseases together caused three-fourths of the total deaths or 5·7 per cent. For an account of the insanitary condition of this town *vide* Health Report.

Last year I gave the ratio of deaths at 5 years and under to the total deaths in each registration town in the Province. This year I purpose to shew similarly, the percentage of deaths among children under 1 month, 6 months, and from 1 to 5 years of age.

Thus the ratio of deaths of the sexes under these headings to total deaths, is:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month ... ... | 3·2 ... ... ... | 2.06 | per cent |
| Six months ... ... | 2·06 ... ... | 1·6 | do |
| One year... ... ... | 1·03... ... ... | 1·1 | do |
| One to 5 years ... | 4.4... ... ... | 3·4 | do. |

---

Population decreased but cause of decrease not explained.

23. KYOUK-PHYOO:—The strength of population is recorded as 3654. Last year it was stated to be 3690. In 1869 there were 68 births and 93 deaths. The latter exceeding the former by 25 in number, but the difference in the strength of population as given for the two years is 36, thus there are 11 persons unaccounted for, and this is not explained. In my own opinion their numbers have not decreased. Kyouk-Phyoo is a small and a very healthy town, and there can be no difficulty in ascertaining the exact movements of the people. The death rate has even decreased by 2·5 on the pre-

vious year. Had any actual emigration taken place it ought most certainly to have been noted in the report.

| | | |
|---|---|---|
| The Birth rate is | 16·6 | per mille |
| The Death rate... | 25·4 | do. |

Here again it is sufficiently apparent that proper attention has not been given to the registration of births during the year. Last year the figures stood thus:—

| | | |
|---|---|---|
| The Birth rate ... | ...24·3 | per mille |
| The Death rate | ...27·9 | do |

I cannot believe that the habit of procreation in the women of Kyouk-Phyoo has fallen off in one year to the extent of 7·7 per mille, the actual difference between the two Birth rates for 1868 and 1869. The ratios of deaths from the following causes are:—

| | | |
|---|---|---|
| Fever... ... ... ... | ...13·68 | per mille |
| Cholera... ... ... | 1·64 | do |

The ratio of deaths under five years to total deaths being:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month ... ... | 2·1... | ...1.07 | per cent |
| Six months ... .. | nil ... | ... nil | do |
| One year ... ... | ...nil ... | ... nil | do |
| One to 5 years... | ...nil ... | ...1·07· | do. |

I can scarcely credit that no deaths occurred between the ages of one month and one year, altho' it might be possible.

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Population of Sandoway said to have increased by 23 persons only, whereas the figure prove an increase of 64.

24. SANDOWAY:—This is a town said to contain a population of 2376, which exhibit an increase of 23 persons only on that given for 1868. In 1868 the Births were in excess of the deaths by 50 in number; in 1869 the increase was 37, but as the difference between the strength of population in the two years is set down at 23, it is evident that 64 individuals are unaccounted for. Mr. Pyster, the Medical Officer in charge of Sandoway says, "the decrease is due to emigration to Rangoon and other places," but this does not explain the discrepancy between the figures 23 given by him, and 64 the actual decrease proved from his own figures. Not half enough attention is paid to the accuracy necessary in recording the vital statistics of out-stations.

The Birth rate is ... ... 44·6 per mille
The Death rate ... ... 29·0 do.

The ratio of deaths from the following causes are :

Fevers ... .. 11·36 per mille
Bowel Complaints... 3·78 do.

These two diseases together caused more than half of the mortality.

The ratio of deaths under five years to total deaths, is :—

| | | *Males.* | *Females.* | |
|---|---|---|---|---|
| One month | ... ... | nil | nil | per cent. |
| Six months | ... ... | 7·2 | 10·1 | do |
| One year | ... ... | 7·2 | nil | do |
| One to 5 years | ... .... | 11·4 | 13·0 | do. |

I can here, as is the case of Kyouk-Phyoo, hardly credit that no deaths among children took place under one month of age. Were there any difficulty in registering Births in small towns, I would be the first to make allowances, but as I am fully convinced there can be none whatever it is surprising that more accurate returns are not rendered.

## PEGU DIVISION.

Returns Nos. 1,2,3,4,5,6,7,8&9 for the town of Rangoon only, drawn up in accordance with the order suggested by Sanitary Commissioner with the Government of India.

25. RANGOON :—In my last Annual report I submitted 8 returns for the town of Rangoon tabulated agreeably to the Sanitary Commissioner's new forms of registration. I do so again this year to more distinctly show the improved healthfulness which has taken place, with the addition of a 9th table. They will be found at the end of this report numbered consecutively from 1 to 9.

In December 1869, rough census of the town of Rangoon was taken. The population is now supposed to amount to 96,942.

26. In December last a rough census was taken by Captain Evanson, the Offg. Town Magistrate. The population is now calculated at 96,942, but this includes the Cantonment and the prisoners in the Gaol neither of which should have been entered in the registration returns for the town. Of course I have only to deal with the town limits, and the number of people said to be living within its 12 quarters is 88,677. All my calculations are based upon these figures. The increase therefore on last year is 15,982. This however is thought to be very far from

accurate, as may be seen in the Health Report paragraph 210: However to proceed.

| | | |
|---|---|---|
| The Birth rate is... | ...15·9 | per mille |
| The Death rate | ...19·7 | do. |

In my report for 1868, I gave the mortality in the three most unhealthy quarters of Rangoon separately, *viz.*, Yambonquin, Botatoung, and Poozoondoung. The death rate in the three amounted to 32·3 per mille; and this year matters are not much better. The remaining portions of the town however have very considerably improved in healthfulness, and for the reasons already given in paragraph 194. The rate 19·7 may be accepted as correct. I am not on the other hand prepared to agree with the birth rate 15·9. At present the Magistrate's Head clerk acts as Registrar, but the registration of Births is now a matter of great difficulty; and I think that the time has come when a better system might be organized for collecting the vital statistics in Rangoon. Mr. Hardinge cannot perform the duties of the department in this rapidly increasing town satisfactorily single handed.—He should be allowed an assistant.

The death rate on the new Census is:—

| | | |
|---|---|---|
| Fever | ...8·7 | per mille |
| Small Pox | ...1·91 | do |
| Bowel Complaints ... | ·75 | do. |

The comparison is very favorable with the year 1868, when Fever stood at 10·7 per mille and Bowel Complaints at 9·—Small Pox shews a slight increment ·88:—This disease has now entirely left the town.

The ratio of deaths under five years to total deaths, is:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... | ...1·3... | ...1·0 | per cent |
| Six months... | ...3·2... | ...1·9 | do |
| One year ... | ...1·3... | ...1·2 | do |
| One to 5 years... | 12·0... | ...9·8 | do. |

These figures give a total death rate of 31·8 per cent on the whole mortality for the year, and 38·4 per cent on the total births. In the table C. 18 deaths are recorded under the heading "Still born," but as premature births are included (number not specified) I have omitted them in the above ratio.

The improvements which I have recommended for the town of Rangoon will be found pages 102-113, and paragraphs 201 220 of the Health Report.

27. BASSEIN :—In 1868, after a census taken by the Magistrate and Civil Surgeon, the population was set down at 18,530. This I proved to be far from correct. For 1869, the total strength is given at 20,101 which exhibits an increment of 1571 souls, but how obtained is not mentioned, still I consider the number of inhabitants in this town under-estimated.

An increase is given of 1571 in the strength of the population, but how obtained is not mentioned.

| | | |
|---|---|---|
| The Birth rate is ... | 40.2... | per mille |
| The Death rate ... | 31.8... | do. |

I believe the population of Bassein to be about 23,000, and the above rates most certainly indicate that the total strength is higher than 20,101, the figures furnished me by the Magistrate.

The deaths from Cholera are slightly in excess of last year, otherwise the ratio per mille compares favorably.

The death rate from

| | | |
|---|---|---|
| Fever is.. ... ... ... | 3.62 | per mille |
| Cholera... ... ... ... | 1.88 | do |
| Bowel Complaints... ... | 3.44 | do. |

The age return shews a ratio of deaths at five years and under to total deaths of :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | 4.2 | 2.0 | per cent |
| Six months... ... | 7.4 | 4.6 | do |
| One year. ... ... | 2.9 | 1.2 | do |
| One to 5 years. ... | 9.3 | 9.3 | do. |

The mortality among children therefore up to five years of age in the year 1869 was 41.2 of the total deaths, and 32.7 of the total births. The deaths of the sexes being in the proportion of 100 to 72. The registration in Bassein cannot have been properly supervised.

---

28. MYANOUNG :—The population of this town is recorded at a strength of 6074 persons against 5829 last year, shewing an increase or 245 souls.

Population exhibits an increment on last year's returns.

| | | |
|---|---|---|
| The Birth rate is... ... ... | 36.3 | per mille |
| The Death rate... ... ... | 27.3 | do. |

The Death rate from

| | | |
|---|---|---|
| Fever, is... ... ... ... | 4.62 | per mille |
| Cholera... ... ... ... ... | 2.46 | do |
| All other diseases not specified in the returns. | 19.7 | do. |

The percentage of deaths to total deaths under five years is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | 1.8 | 1.8 | per cent |
| Six months... ... | 3.6 | 1.8 | do |
| One year. ... ... | 2.4 | 1.2 | do |
| One to 5 years. ... | nil. | nil. | do. |

or in the proportion of sexes of 100 to 61.

The Birth rate of this town is favorable and I think may be received as true. The death rate would be 24.8 if the mortality from Cholera be excluded ; a very reasonable rate. The work of registration has been performed with every possible care under the immediate superintendence of Captain Plant, the Deputy Commissioner. I still think however, that the population is estimated a little too low. Coolies immigrating into the town escape notice perhaps, and the deaths which took place among them are recorded and thus swell the returns. I offer this as a hint only ; of course I am open to correction.

---

Population of Henzadah is not known. It is at present greatly under-estimated.

29. HENZADAH:—In my Report last year I pointed out that the strength of the population of this town is not known. In 1868 it was stated to be 14,551, and it is now given at 14,674 or 123 persons more, when I am quite satisfied that were a careful numbering of the people made, including the floating river population and immigrant coolies, we should find it to amount to over 26,000 souls.

| | | |
|---|---|---|
| The Birth rate, is... ... ... | 64·1 | per mille |
| The Death rate ... ... ... | 28·2 | do. |

The Death rate from—

| | | |
|---|---|---|
| Fever, is ... ... ... ... | 6·78 | per mille |
| Small Pox ... ... ... ... | ·48 | do |
| Cholera ... ... ... ... ... | ·88 | do. |

The town has been remarkably healthy during the year. The ratio of Deaths under 5 years to total Deaths is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | 3·3... | ... 2·4 | per cent |
| Six months... ... | 12·1... | ...10·4 | do |
| One year ... ... | 4·8... | ... 4·3 | do. |
| One to 5 years ... | nil... | ... nil | |

Here we have a percentage of 37·5 deaths under five years of age on the total mortality for the year; and the proportion of deaths of the sexes, we find to be,—100 males to 84 females.

The figures forwarded to my office from Henzadah are far from reliable.

---

Population shews an increase of 962 persons on last year.

30. KYANGHEEN:—Population 8637. For 1868 it was stated to be 7675, thus an increase of 962 persons has taken place:—

The Birth rate is... ... ...32·8 per mille
The Death rate ... ... 18·6 do.

The Death rates from the principal diseases are:—

Fever... ... ... ... ...6·59 per mille
Bowel Complaints... ... 1·27 ditto.

The year was characterized by immunity from Cholera. Kyangheen seldom suffers from this disease, and the question why it should generally escape while other towns to the north and south of it are frequently visited, is one of the greatest interest. Captain Plant says that, the large sand bank in front of the town keeps the river traffic at a distance, and that immigrants therefore pass on to towns and villages more accessible.

The percentage of deaths to total deaths under five years of age is:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | 1.8... | ... .6 | per cent |
| Six months ... ... | ...3·1... | ...4·9 | do |
| One year... ... ... | ...4·3... | ...3·1 | do |
| One to 5 years ... | nil... | ...nil | do. |

Captain Gower the Assistant Commissioner, when at Myanoung took great care in collecting the statistics of this town. He also did much besides for the sanitary improvement of the town itself. The Public Health has been good, and I am quite prepared to accept the figures given me in the printed returns as nearly correct as they can be.

31. ZALOON :—Population 4597. Last year it was 2989. There has been an increase therefore of 1608 souls in the year.

Population exhibits an increase of 1608 souls on last year's returns.

The Birth rate, is... ... 38.9 per mille
The Death rate ... 29.3 do.

In my remarks last year I drew attention to the great discrepancies which existed in the Zaloon returns for the want of a proper census. This year the strength of the population has been raised, but how brought about is not explained; I still nevertheless consider it placed at too low a figure.

The death rate from

Fever, is ... ... ... 9.57 per mille
Cholera. ... ... .... 3.04 do.

If the mortality from Cholera be deducted the millesimal death rate would be only 26.3, and as Zaloon is subject to inundations from the Irrawaddy, which gives rise to annual outbreaks of Fever, this rate I think is trustworthy. In fact both the Birth and Death rates are fairly correct.

The ratio of deaths under five years to total deaths is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | 6.6 | 7.4 | per cent |
| Six months... ... | 8.1 | 6.6 | do |
| One year. ... ... | 2.2 | 2.2 | do |
| One to 5 years. ... | nil. | nil. | do. |

or in the proportion of 100 males to 95 females.

---

32 PROME :—The population of Prome in 1868 was said to amount to 25,095 souls; for 1869 it is recorded at a strength of 24,616, or shewing a falling off of no less than 479 persons.

Population of Prome decreased by 479 persons in the year. Birth and death rates high, indicating that the total inhabitants have been under-estimated. Reason for this belief explained.

The Birth rate is... ... 64.4 per mille
The Death rate ... 64.7 do.

This is simply absurd. All who are acquainted with Prome to commence with, know that there must be more than 25,000 people living in it if the suburbs be included in the calculation, or the town has remained stationary since Major McMahon took the census in 1857; and, the continual accession to its strength by immigration, which has for years

puzzled the authorities what to do with for the want of building room, is a myth. But it is unnecessary to comment upon this point further, the birth rate alone 64.4 per 1000 is sufficient to prove to us—and I doubt if the births in any town in any country are ever over registered—that, the population must at any rate reach a figure equal to about 46,000, if the healthy rate of 34 per thousand be taken as a standard average at which children should be born, and I cannot see any reason to believe that the women of Prome bear children faster than in any other locality. If correct registration prove anything, it proves this, that the Birth rate in British Burma does not differ from the Birth rate elsewhere. There is only one other explanation which I can suggest for the high birth rate given for this town, and that is, the area of registration must have been greater than the limits taken for the estimate of the population. I was apprehensive of some such error as this creeping into the registration figures when at Prome myself in January last, and I requested the Medical Officer to examine the matter carefully, and see that the calculation of the strength of the population and the record of Births and Deaths were taken over the same area.

33. Now the death rate 64.7 still further tends to support what I have said in regard to an incorrectly estimated population. It is seldom that any mistakes are made in registering the actual mortality among our urban communities. The figures given therefore as the total deaths which occurred in the town of Prome during the year, or 1,594 can be accepted as an accurate record of a certain mortality. Now deducting the deaths from Cholera 114 and Small Pox 355, the two epidemics which caused the excess, we have a balance of 1,125 deaths which gives on a presumed population of 46,000 souls, a death rate equal to 24.8 per mille—a very good average indeed for Prome. Granted however that there are not so many persons living within the town limits of Prome, and the deductions from the figures given us lead to the inference that, the births and deaths have been registered during 1869, over an undefined limit of country containing about 46,000 inhabitants.

The death rates from the following diseases on the given strength of population, viz: 24,616, are:—

| | | |
|---|---|---|
| Fever... ... ... ... | 12.62 | per mille |
| Cholera. ... ... ... | 4.63 | do |

| | | |
|---|---|---|
| Small Pox... ... ... | 14.42 | do |
| Bowel Complaints. ... | 4.42 | do. |

or the ratio of deaths at five years and under to total deaths is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month. ... ... | 3.3 | 1.9 | per cent |
| Six months. ... ... | 5.2 | 3.1 | do |
| One year... ... ... | 2.3 | 1.2 | do |
| One to 5 years. ... | 15.0 | 13.0 | do. |

or in the proportion of 100 males to 77 females.

I have explained fully in my Health Report the large structural sanitary works now in course of completion at this station. Prome, once so insalubrious will soon I have every reason to believe number her endemics with the things of the past, and reach the standard of healthfulness of the other towns of this Province, which have benefitted in such a high degree from practical hygiene or sanitation.

---

Population has increased by 494 persons. Still considered under-estimated.

34. SHWE-DOUNG :—The population of Shwè-doung has increased during the year by 494 persons ; it is now stated to be 10,439.

| | | |
|---|---|---|
| The Birth rate is... ... | 59.1 | per mille |
| The Death rate ... ... | 38.0 | do. |

These rates shew that the census whenever taken is very much understated.

The Death rate from :—

| | | |
|---|---|---|
| Fever is ... ... ... | 6.51 | per mille |
| Cholera. ... ... ... | .47 | do |
| Small Pox... ... ... | 1.53 | do |
| Bowel Complaints. ... | 4.40 | do. |

The registration is conducted by a Native official, but there is no European Officer to look after him. Colonel Horace Browne, the Deputy Commissioner, says that, "these returns are not reliable."

The ratio of deaths under five years to total deaths, is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month. ... ... | 2.3 | 1.5 | per cent |
| Six months. ... ... | 10.8 | 4.5 | do |
| One year... ... ... | 2.2 | 3.0 | do |
| One to 5 years. ... | 9.3 | 8.5 | do. |

Colonel Browne again remarks that "the births unlike the deaths easily escape observation" and that "as regards deaths the Shwè-doung returns are most untrustworthy." I would add to this that I do not believe in the ages given at which the children are said to have died.

---

35. THAYETMYO :—These returns do not include the Cantonment. The population has increased during the year by 133 souls.

Returns of Thayetmyo do not include the Cantonment. Increase to population during the year 133 souls.

The Birth rate, is... ... 46.5 per mille
The Death rate ... ... 43.8 do.

A proper census of this station is much required. A population of 8,607 cannot possibly be correct with a Birth rate of 46.5 per 1000.

The Death rate from :—

| | | |
|---|---|---|
| Fever ... ... ... | 8.01 | per mille |
| Cholera... ... ... ... | 3·95 | do |
| Bowel Complaints... | ·34 | do. |

Thayetmyo is a very healthy station and, if the Cholera be excluded from the calculation, the death rate would be 31·2 which distinctly shews that the presumed strength of the inhabitants is under-stated.

The ratio of deaths under five years to total deaths is:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | ...3.3... | ... ·9 | per cent |
| Six months... ... | ...4·2... | ...4·2 | do |
| One year... ... ... | 3·9... | ...1·9 | do |
| One to 5 years... ... | 10·8... | ..15·5 | do. |

---

36. TOUNGOO:—The returns for this town received from the Deputy Commissioner are a great improvement on those submitted for former years, although inaccurate. He says:—"Dr. Parker (Civil Surgeon) has taken as the population of Toungoo on which he bases his report 11,466 souls, but this includes 1857 persons who do not reside within Municipal limit but in the suburbs; the number residing within Municipal limit being 9,723 or 130 more than in 1868." Now Dr. Parker shews a decrease of 122 persons on the strength of population as rendered last year, and the Deputy Commisssioner accepts the figures 11,466 notwithstanding what he has said, at least they head his returns as the presumed strength of the inhabitants.

Strength of population incorrectly given. Birth rate too low. Death rate too high.

The Birth rate is... ... ...36·8 per mille
The Death rate ... ...28·9 ditto.

The 332 deaths registered I have no doubt for reasons stated elsewhere are a faithful record of the mortality which really took place in the year. These figures give a death rate of 28·9 which is obviously untrustworthy. Toungoo is a very healthy town, and therefore it is plain enough that the census has not been taken for a long time and that the annual increment by immigration from the Shan States and Burma Proper is not known.

The Birth rate last year was 25·9, so far the present figures given in the tabular statement contrast favorably, but yet the registration of many children must have been neglected.

The Death rate from:—

Fever, is ... ... ...6·28 per mille
Small Pox... ... ...1·40 ditto
Bowel Complaints... 3·31 ditto.

The ratio of Deaths at five years and under to total deaths is:—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... | ...2·7... | ...3·9 | per cent |
| Six months... | ...3·3... | ...2·7 | ditto |
| One year | ...3·3... | ...2·4 | ditto |
| One to 5 years | ...7·7... | ...6·6 | ditto. |

## TENASSERIM DIVISION.

37. MAULMAIN:—The population has increased during the year by 6,892 persons and is accounted for by the Magistrate thus:—

Great increase of population. Magistrate's explanation of the increase.

"This increase may be attributed to the forest operations at the end of the year being at a standstill—the Burmese thrown out of work still hanging about the town—and traders who but for the disturbed state of the Frontier would have left the town, keeping to their houses; and the circumstances that the Chuliah vessels had all arrived at the time the census was taken while the emigrants had not left the country."

The Birth rate is... ...14·4 per mille
The Death rate ... ...14·2 ditto.

Dr. Marr, the Civil Surgeon, says "the birth rate per 1000 of the entire population is 14·41 and according to race the birth rate among the Burmese is 23·64 and among aliens, 7·03. It will be thus seen the Burmese births are three times

as much as that of the aliens, although the latter number 8,000 souls more in the population. The excess is only apparent as the females amongst Burmese are nearly equal to the males, whilst among aliens the females are to the males as 1 to 3. Moreover, a large proportion of the females of the alien population are prostitutes." Again, of the death rate Dr. Marr continues: "the death rate during the year for the whole population was 14·28 being a little less than that of the healthiest parts of England as stated in last report, the average death rate for all England being 22·36. This approximates to the death rate amongst the Burmese portion of the population, which I have already shewn is 22·19 per 1000."

If the floating population which is chiefly composed of single men and prostitutes be excluded from the calculation, the figures given by Dr. Marr may be accepted as fairly reliable. In fact Maulmain is one of the healthiest towns in the East,—perhaps in the whole world.

The Death rate from :—

| | | |
|---|---|---|
| Fever, is... ... ... | 3·76 | per mille |
| Cholera... ... ... | ·40 | ditto |
| Small Pox... ... ... | ·16 | ditto |
| Bowel Complaints... | 2·36 | ditto. |

The ratio of deaths at five years and under to total deaths is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... | ... ·3... | ... ·8 | per cent |
| Six months | ... ·9... | ... ·7 | ditto |
| One year | ... ·7... | ... ·9 | ditto |
| One to 5 years | ...4·5... | ...3·5 | ditto. |

---

33. TAVOY:—The population is given as 14,509 or 9 less than last year. No explanation is given of this decrease.

Returns exhibit a decrease of 9 persons in strength of the population.

| | | |
|---|---|---|
| The Birth rate is... ... | 23·3 | per mille |
| The Death rate ... | 26·8 | ditto. |

Excluding the mortality from Small Pox or 7·44 per mille, the death rate exhibits a healthy state of the town. The Births I think are not registered with sufficient accuracy, but this is a very general fault.

The Death rate from :—

| | | |
|---|---|---|
| Fever, is... ... ... | 4·82 | per mille |
| Small Pox ... ... | 7·44 | ditto. |

Five deaths are entered as having taken place during the year from Cholera but no particulars are given.

The ratio of deaths at five years and under to total deaths is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... | ...1·0... | ... ·5 | per cent |
| Six months | ...3·3... | ...1·2 | ditto |
| One year... | ...1·7... | ...nil | ditto |
| One to 5 years | ...8·9... | ...4·8 | ditto. |

---

There is a decrease in the population of 47 souls not explained

39. MERGUI :—The population is given as 47 souls less than last year; but the cause of decrease is not mentioned.

The Birth rate, is... ... 35·0 per mille
The Death rate ... 65·3 ditto.

Deducting the deaths from Cholera and Small Pox 181 and 282 respectively, the death rate would be 16·5 which is very low. Mergui certainly as a rule is a healthy town, but during the recent epidemics I can scarcely credit that only 16·5 persons, per mille, died from ordinary causes. The deaths have been recorded with accuracy. I am therefore inclined to think that probably more fatal cases have been placed to Cholera and Small Pox than really occurred. The Birth rate 35·0 is a good average, but the incorrect registering of the actual number of children born in our urban communities is universal, and we are therefore justified in concluding that they have been under-stated here. Thus I imagine the population has not decreased ; this however can only be ascertained by a correct numbering of the people.

The Death rate from :—

Fever, is... ... .. 5·06 per mille
Cholera ... ... ..19·07 ditto
Small Pox ... ... 29·72 ditto
Bowel Complaints...2·74 ditto.

The ratio of deaths at five years and under to total deaths, is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month..... | ·8 | ·3 | per cent |
| Six months..... | 1·6 | 1·4 | do |
| One year..... | 4·3 | 2·7 | do |
| One to 5 years..... | 10·4 | 8·3 | do. |

The particulars of the Cholera and Small Pox visitations will be found under their proper headings in the Health section

of this Report. The course of the former epidemic is distinctly shown in my Cholera map which accompanies this Report.

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40. SHWE-GYEEN :—The population has decreased during the year by 184 persons. This decrease is not accounted for.

Decrease in the population during the year of 184 persons unaccounted for.

The Birth rate is..... 18·7 per mille
The Death rate ..... 16·0 do.

These figures contrast favorably with the rates given for last year which were:—

Birth rate ..... 15·3 per mille
Death rate ..... 20·6 do.

41. Shwè-gyeen a few years ago was considered one of our most sickly stations. It has proved itself however under judicious sanitary measures and great attention on the part of the Local Officers to conservancy, to be one of the healthiest towns in British Burma.

The death rate from :—

| | | |
|---|---|---|
| Fever, is ... ... | 8.63 | per mille |
| Small Pox.... ... | .13 | ditto |
| Bowel Complaints.. | 2.92 | ditto. |

The rate of deaths at five years and under to total deaths, is :—

| | *Males.* | *Females.* | |
|---|---|---|---|
| One month... ... | nil. | 1.7 | per cent |
| Six months... ... | 4.3 | 5.2 | ditto |
| One year. ... ... | nil. | nil. | ditto |
| One to 5 years..... | 3.4 | 4.3 | ditto. |

I cannot quite credit the correctness of the age table for this town.

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## GENERAL ANNUAL RETURNS FOR THE WHOLE PROVINCE,

A. B. C. D.

42. The total population of the seventeen towns as given in the several returns is, 322,728.

Aggregate population of the 17 registration towns exhibits an increment of 27,499 souls on that rendered for 1868.

The Birth rate, is... ... 29.6 per mille
The Death rate ... 29.0 ditto.

43. In paragraph 11 I said that, excluding the mortality from Cholera and Small Pox, the death rate would be 22.4 or less by 3.0 per mille than in 1868, deducting of course in that year the mortality from the same diseases.

General Birth and Death rates.

The Birth rate 29.6 has been already analysed, and I have expressed my opinion that it is too low and doubtless inaccurately recorded.

Female Births in excess of Males.

44. The female births were in excess of the males in five towns only, namely Myanoung, Kyangheen, Shwè-doung, Toungoo and Maulmain.

Proportion of births according to sex.

45. The proportion of children born in the seventeen towns according to the sexes, is as follows:—

100 males to 73 females.

The months in which the largest and the smallest number of children were born.

46. The largest number of children were born in the month of December and the smallest in April.

The greatest mortality occurred in July, and the smallest in May.

47. The greatest number of deaths took place in the month of July and the smallest in May.

Death rate per cent on total mortality of the 17 towns for 1869, according to ages and sexes.

48. The following table exhibits the death rate per cent on the total mortality of the 17 towns for the year 1869, according to Ages and Sexes.

| AGE. | MALES. | FEMALES. |
|---|---|---|
| Still Born. | 1.6 | 1.3 |
| Under 1 month. | 2.2 | 1.4 |
| „ 6 do. | 4.1 | 3.0 |
| „ 1 year. | 2.1 | 1.9 |
| 1 to 5 do. | 9.1 | 7.9 |
| 5 to 10 do. | 4.6 | 3.7 |
| 10 to 15 do. | 1.7 | 1.2 |
| 15 to 20 do. | 2.5 | 1.6 |
| 20 to 25 do. | 3.8 | 3.7 |
| 25 to 30 do. | 5.1 | 2.9 |
| 30 to 35 do. | 3.9 | 2.0 |
| 35 to 40 do. | 3.7 | 2.0 |
| 40 to 45 do | 2.2 | 1.3 |
| 45 to 50 do. | 1.9 | 1.0 |
| 50 to 55 do. | 1.1 | .9 |
| 55 to 60 do. | 1.5 | 1.2 |
| 60 to 65 do. | 1.1 | 1.1 |
| 65 to 70 do. | 1.4 | 1.4 |
| 70 and upwards. | 2.7 | 2.9 |

I refrain from commenting upon these figures as the difficulty of obtaining correct information on this subject is very great. The Burmese are not particular in regard to age, and the Registrars enter in their returns any thing that is told them.

Proportion of deaths of sexes in the 17 towns.

49. The proportion of deaths of the sexes in the several populations we find to be :—

| Towns. | *Males.* | *Females.* | *Ratio.* |
|---|---|---|---|
| Akyab... | 743 | 421 | 100 to 56 |
| Kyouk-Phyoo | 59 | 34 | 100 to 57 |
| Sandoway | 41 | 28 | 100 to 68 |
| Rangoon | 1057 | 697 | 100 to 65 |
| Bassein | 364 | 277 | 100 to 76 |
| Myanoung | 95 | 71 | 100 to 75 |
| Henzadah | 207 | 206 | 100 to 99 |
| Kyangheen | 78 | 83 | 100 to 106 |
| Zaloon | 71 | 64 | 100 to 90 |
| Prome | 881 | 713 | 100 to 80 |
| Shwè-doung | 213 | 184 | 100 to 86 |
| Thayetmyo | 149 | 154 | 100 to 103 |
| Toungoo | 184 | 148 | 100 to 80 |
| Maulmain | 657 | 365 | 100 to 55 |
| Tavoy | 190 | 200 | 100 to 105 |
| Mergui | 352 | 268 | 100 to 76 |
| Shwè-gyeen | 50 | 65 | 100 to 130. |

Return C. The Death rates from the principal diseases.

50. The return C. shews the deaths from all causes during the year. The death rates from the principal diseases are:—

| | | |
|---|---|---|
| Fever | 7·4 | per mille |
| Cholera | 3·1 | ditto |
| Small Pox | 3·2 | ditto |
| Bowel Complaints | 1·9 | ditto. |

These diseases caused together 54·5 per cent of the total mortality. Fevers and Bowel Complaints shew a satisfactory falling off on last year's returns which give the following figures:—

| | | |
|---|---|---|
| Fever | 8·0 | per mille |
| Bowel Complaints | 2·3 | ditto. |

Ratio of deaths from Cholera per mille of population in each Registering town.

51. The ratio per mille of population of each town in which Cholera was registered, is as follows:—

| | | |
|---|---|---|
| Akyab... | 35·3 | per mille |
| Kyouk-Phyoo... | 1·64 | ditto |
| Rangoon... | ·02 | ditto |
| Bassein... | 1·88 | ditto |

| | | |
|---|---|---|
| Myanoung... | 2·46 | ditto |
| Henzadah... | ·88 | ditto |
| Zaloon... | 3·04 | ditto |
| Prome... | 4·63 | ditto |
| Shwè-doung... | ·47 | ditto |
| Thayetmyo... | 3·95 | ditto |
| Maulmain... | ·40 | ditto |
| Tavoy... | ·34 | ditto |
| Mergui... | 19·07 | ditto. |

Particulars of outbreak of Cholera and its cessation to be found in Health Report.

52. The particulars of outbreak and disappearance of the disease in each District is fully given in the Health Report.

Small Pox.

53. Small Pox was extended over ten towns. The percentage of deaths from this disease is :—

| | | |
|---|---|---|
| Akyab... | ·41 | per cent |
| Rangoon... | ·19 | ditto |
| Henzadah... | ·04 | ditto |
| Prome... | 1·44 | ditto |
| Shwè-doung... | ·15 | ditto |
| Thayetmyo... | ·23 | ditto |
| Toungoo... | ·14 | ditto |
| Maulmain... | ·01 | ditto |
| Tavoy... | ·74 | ditto |
| Mergui... | 2·97 | ditto. |

Attention particularly drawn to remarks on Vaccination in para. 76 and foot note of Health Report.

54. I desire particularly to draw attention to my remarks on Vaccination in paragraph 76 and foot note of the Health Report page 49.

Children born dead and percentage on total deaths according to sexes.

55. The children born dead were 277 ; or a ratio of 8.3 per cent on the total deaths under five years of age.

According to sexes they were as follows :—

| | | |
|---|---|---|
| Males... ... ... ... | 1.6 | per cent |
| Females. ... ... ... | 1.3 | ditto. |

or in the proportion of 100 males to 82 females.

Deaths from Suicide, Wounding, Accident, and Snake bite or killed by wild beasts.

56. In the 17 towns 18 deaths are recorded under the heading "Suicide," 23 are placed to "Wounding," and 9 to "Snake bite or killed by wild beasts."

A correct periodical numbering of urban population is absolutely necessary.

57. Unless a careful census is taken periodically, vital statistics, so far as our urban populations are concerned must continue to be unreliable.

58. Admitting that our system of Registration is very far from perfect in some quarters not receiving that care and attention which it deserves on the whole considerable advancement has been made during the past year. The nomenclature has been adhered to in all the returns for 1869. The deaths have been generally faithfully recorded; I would however draw especial attention to the Births and Age tables. These are not sufficiently supervised as a rule. Many of the "Births and Deaths" Reports by local Officers exhibit a real interest in the work of registration which is very encouraging.

Considerable improvement in Registration has been made during the year. Officers attention is particularly desired in the returns of Births and Ages.

59. I desire in concluding this my Third Annual Report on the Public Health and Vital Statistics of British Burma to express my sincere thanks to all Officers both Civil and Medical, serving under this Administration, for the great interest which they have displayed in the cause of sanitation, and for the support on all occasions rendered me in the performance of my duties.

60. Mr. J. E. Dawson, my clerk, has carried on the subordinate duties of my office throughout the year with assiduity. He has worked well and given me entire satisfaction.

Mr. J. E. Dawson, Clerk of the Sanitary Commissioner's Office.

RANGOON,
12th May 1870.

A. J. COWIE,
*Sanitary Commissioner,*
*for British Burma.*

# ANNUAL FORM NO. I.

*Deaths registered in the different Quarters of Rangoon, during the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | 6 | 7 | | | 8 | | | 9 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Area in statute acres. | Average population per statute acre. | Number of Deaths Registered. | | | Ratio of Deaths per 1000 of Population. | | | Mean ratio of Deaths per 1000 during the previous year. | | |
| | | | M. | F. | Total. | | | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne... | 7463 | 7867 | 15330 | 186 | 82 | 163 | 122 | 285 | 21·84 | 15·50 | 18·59 | 34·01 | 16·05 | 23·7 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 179 | 21 | 28 | 25 | 53 | 10·62 | 20·71 | 13·79 | 30·75 | 31·36 | 31·0 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 80 | 91 | 109 | 40 | 149 | 19·69 | 22·08 | 20·25 | 24·30 | 23·02 | 23·8 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 100 | 58 | 44 | 24 | 68 | 8·84 | 28·07 | 11·55 | 10·43 | 41·83 | 16·8 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 19½ | 137 | 111 | 40 | 151 | 22·61 | 90·29 | 28·21 | 21·85 | 77·34 | 29·3 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 160 | 57 | 54 | 33 | 87 | 10·44 | 8·16 | 9·44 | 9·62 | 7·24 | 8·3 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 39½ | 35 | 25 | 12 | 37 | 11·55 | 17·80 | 13·05 | 27·35 | 23·25 | 25·24 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 39½ | 60 | 87 | 56 | 143 | 29·31 | 34·20 | 31·05 | 66·40 | 34·54 | 49·4 |
| 9 | | Poozoondoung | 6959 | 5397 | 12356 | 1200 | 123 | 180 | 129 | 309 | 26·03 | 23·90 | 25·00 | 36·18 | 23·10 | 29·6 |
| 10 | | Yambonquin... | 5640 | 4331 | 9971 | 100 | 99 | 177 | 145 | 322 | 31·38 | 33·47 | 32·35 | 35·88 | 24·14 | 29·8 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 100 | 63 | 47 | 42 | 89 | 17·47 | 15·40 | 14·05 | 31·75 | 31·12 | 31·4 |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 70 | 80 | 30 | 31 | 61 | 8·38 | 14·93 | 10·79 | 25·17 | 17·47 | 21·2 |
| | | Total... | 55612 | 33065 | 88677 | 2273½ | 36 | 1055 | 699 | 1754 | 18·97 | 21·10 | 19·77 | 28·28 | 22·43 | 25·43 |

## ANNUAL FORM NO. II.

*Deaths Registered in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May. | | |
| | | | M. | F. | Total. | M. | F. | T. | M | F. | T. | M | F. | T. | M | F. | T. | M | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 15 | 8 | 23 | 8 | 6 | 14 | 14 | 7 | 21 | 14 | 8 | 22 | 11 | 8 | 19 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 2 | 1 | 3 | 1 | 0 | 1 | 2 | 1 | 3 | 3 | 2 | 5 | 3 | 1 | 4 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 3 | 2 | 5 | 8 | 2 | 10 | 17 | 5 | 22 | 12 | 7 | 19 | 10 | 3 | 13 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 1 | 3 | 4 | 6 | 1 | 7 | 4 | 0 | 4 | 3 | 0 | 3 | 2 | 1 | 3 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 12 | 3 | 15 | 5 | 5 | 10 | 8 | 4 | 12 | 11 | 4 | 15 | 10 | 3 | 13 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 5 | 1 | 6 | 3 | 0 | 3 | 2 | 3 | 5 | 3 | 3 | 6 | 3 | 0 | 3 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 3 | 1 | 4 | 0 | 0 | 0 | 3 | 2 | 5 | 1 | 0 | 1 | 0 | 1 | 1 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 8 | 2 | 10 | 3 | 4 | 7 | 6 | 2 | 8 | 9 | 8 | 17 | 5 | 4 | 9 |
| 9 | | Poozoondoung ... | 6959 | 5897 | 12356 | 17 | 7 | 24 | 18 | 12 | 30 | 13 | 9 | 22 | 11 | 9 | 20 | 17 | 6 | 23 |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 39 | 18 | 57 | 34 | 26 | 60 | 16 | 14 | 30 | 10 | 4 | 14 | 5 | 8 | 13 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 5 | 3 | 8 | 7 | 2 | 9 | 3 | 6 | 9 | 3 | 3 | 6 | 4 | 3 | 7 |
| 12 | | Dalla ... | 3576 | 2075 | 5652 | 1 | 2 | 3 | 4 | 0 | 4 | 3 | 2 | 5 | 2 | 2 | 4 | 1 | 3 | 4 |
| | | TOTAL... | 55612 | 33065 | 88677 | 111 | 51 | 162 | 97 | 58 | 155 | 91 | 55 | 146 | 82 | 50 | 132 | 71 | 41 | 112 |

ANNUAL FORM NO. II.—*(Continued.)*

*Deaths Registered in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | June. | | | July. | | | Augt. | | | Sept. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... ... | 7463 | 7867 | 15330 | 15 | 9 | 24 | 18 | 9 | 27 | 18 | 16 | 34 | 13 | 7 | 20 |
| 2 | | Alongyua ... ... | 2635 | 1207 | 3842 | 1 | 1 | 2 | 1 | 2 | 3 | 4 | 3 | 7 | 1 | 3 | 4 |
| 3 | | Tarokdan ... ... | 5546 | 1811 | 7357 | 9 | 5 | 14 | 6 | 1 | 7 | 8 | 2 | 10 | 8 | 5 | 13 |
| 4 | | Pabaidan ... ... | 4977 | 855 | 5832 | 2 | 1 | 3 | 3 | 4 | 7 | 1 | 4 | 5 | 8 | 1 | 9 |
| 5 | | Kyouktada ... ... | 4909 | 443 | 5352 | 17 | 0 | 17 | 9 | 7 | 16 | 7 | 4 | 11 | 10 | 7 | 17 |
| 6 | | Pansodan ... ... | 5170 | 4041 | 9211 | 9 | 3 | 12 | 4 | 4 | 8 | 3 | 3 | 6 | 3 | 3 | 6 |
| 7 | | Mengala ... ... | 2163 | 674 | 2837 | 4 | 1 | 5 | 1 | 2 | 3 | 5 | 1 | 6 | 3 | 1 | 4 |
| 8 | | Botatoung ... ... | 2968 | 1637 | 4605 | 11 | 8 | 19 | 15 | 9 | 24 | 8 | 3 | 11 | 5 | 3 | 8 |
| 9 | | Poozoondoung... ... | 6959 | 5397 | 12356 | 13 | 16 | 29 | 30 | 19 | 49 | 10 | 14 | 24 | 12 | 10 | 22 |
| 10 | | Yambonquin ... ... | 5640 | 4331 | 9971 | 4 | 10 | 14 | 10 | 5 | 15 | 12 | 8 | 20 | 11 | 7 | 18 |
| 11 | | Myatada ... ... | 3605 | 2727 | 6332 | 4 | 3 | 7 | 3 | 5 | 8 | 2 | 6 | 8 | 3 | 3 | 6 |
| 12 | | Dalla ... ... | 3577 | 2075 | 5652 | 3 | 6 | 9 | 8 | 6 | 14 | 4 | 2 | 6 | 1 | 3 | 4 |
| | | TOTAL... | 55612 | 33065 | 88677 | 92 | 63 | 155 | 108 | 73 | 181 | 82 | 66 | 148 | 76 | 55 | 131 |

ANNUAL FORM NO. II.—*(Concluded)*

*Deaths Registered in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Oct. | | | Novr. | | | Decr. | | | TOTAL. | | | No. |
| | | | M. | F. | T. | M | F. | T. | M | F. | T. | M | F. | T. | M. | F. | Total. | |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 15 | 13 | 28 | 12 | 19 | 31 | 10 | 12 | 22 | 163 | 122 | 285 | |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 6 | 1 | 7 | 1 | 6 | 7 | 3 | 4 | 7 | 28 | 25 | 53 | |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 11 | 2 | 13 | 9 | 2 | 11 | 8 | 4 | 12 | 109 | 40 | 149 | |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 7 | 4 | 11 | 6 | 0 | 6 | 1 | 5 | 6 | 44 | 24 | 68 | |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 7 | 3 | 10 | 10 | 0 | 10 | 5 | 0 | 5 | 111 | 40 | 151 | |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 9 | 3 | 12 | 4 | 5 | 9 | 6 | 5 | 11 | 54 | 33 | 87 | |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 2 | 1 | 3 | 1 | 1 | 2 | 2 | 1 | 3 | 25 | 12 | 37 | |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 7 | 4 | 11 | 7 | 4 | 11 | 5 | 3 | 8 | 87 | 56 | 143 | |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 13 | 3 | 16 | 16 | 16 | 32 | 10 | 8 | 18 | 180 | 129 | 309 | |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 13 | 17 | 30 | 12 | 19 | 31 | 11 | 9 | 20 | 177 | 145 | 322 | |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 5 | 4 | 9 | 5 | 3 | 8 | 3 | 1 | 4 | 47 | 42 | 89 | |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 2 | 1 | 3 | 1 | 2 | 3 | 0 | 2 | 2 | 30 | 31 | 61 | |
| | | Total... | 55612 | 33065 | 88677 | 97 | 56 | 153 | 84 | 77 | 161 | 64 | 54 | 118 | 1055 | 699 | 1754 | |

## ANNUAL FORM NO. III.

*Deaths registered from different Causes in the different Quarters of Rangoon, during the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | 6 | | | 7 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Cholera. | | | Small pox. | | | Fevers. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... ... ... | 7463 | 7867 | 15330 | 0 | 0 | 0 | 0 | 1 | 1 | 78 | 33 | 111 |
| 2 | | Alongyua ... ... ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 3 | 2 | 5 | 12 | 8 | 20 |
| 3 | | Tarokdan ... ... ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 14 | 6 | 20 | 68 | 14 | 82 |
| 4 | | Pabaidan ... ... ... | 4977 | 855 | 5832 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 10 | 38 |
| 5 | | Kyouktada ... ... ... | 4909 | 443 | 5352 | 1 | 0 | 1 | 5 | 1 | 6 | 76 | 13 | 89 |
| 6 | | Pansodan ... ... ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 1 | 1 | 25 | 13 | 38 |
| 7 | | Mengala ... ... ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 2 | 2 | 4 | 16 | 2 | 18 |
| 8 | | Botatoung ... ... ... | 2968 | 1637 | 4605 | 0 | 0 | 0 | 0 | 3 | 3 | 56 | 19 | 75 |
| 9 | | Poozoondoung ... ... ... | 6959 | 5397 | 12356 | 0 | 0 | 0 | 11 | 11 | 22 | 98 | 34 | 132 |
| 10 | | Yambonquin ... ... ... | 5640 | 4331 | 9971 | 1 | 0 | 1 | 56 | 46 | 100 | 64 | 26 | 90 |
| 11 | | Myatada ... ... ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 2 | 1 | 3 | 39 | 17 | 56 |
| 12 | | Dalla ... ... ... | 3577 | 2075 | 5652 | | | | 2 | 3 | 5 | 19 | 11 | 30 |
| | | TOTAL... | 55612 | 33065 | 88677 | 2 | 0 | 2 | 93 | 77 | 170 | 579 | 200 | 779 |

## ANNUAL FORM NO. III.—*(Continued.)*

*Deaths registered from different Causes in the different Quarters of Rangoon, during the year* 1869.

| 1 | 2 | 3 | 4 | | | 8 | | | 9 | | | | | | | | | | | | 10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Bowel Complaints. | | | Injuries. Suicide | | | Injuries. Wounding. | | | Injuries. Accident. | | | Injuries. Snake bite or killed by wild Beasts. | | | All other Causes. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 8 | 4 | 12 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 3 | 75 | 81 | 156 |
| 2 | | Alongyne ... ... | 2635 | 1207 | 3842 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 15 | 25 |
| 3 | | Tarokdan ... ... | 5546 | 1811 | 7357 | 4 | 3 | 7 | 1 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 16 | 37 |
| 4 | | Pabaidan ... ... | 4977 | 855 | 5832 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 12 | 12 | 24 |
| 5 | | Kyouktada ... ... | 4909 | 443 | 5352 | 6 | 2 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 21 | 24 | 45 |
| 6 | | Pansodan ... ... | 5170 | 4041 | 9211 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 26 | 19 | 45 |
| 7 | | Mengala ... ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 8 | 13 |
| 8 | | Botatoung ... ... | 2968 | 1637 | 4605 | 1 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 27 | 33 | 60 |
| 9 | | Poozoondoung... ... | 6959 | 5397 | 12356 | 12 | 5 | 17 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 57 | 78 | 135 |
| 10 | | Yambonquin... ... | 5640 | 4331 | 9371 | 8 | 1 | 9 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 47 | 71 | 118 |
| 11 | | Myatada ... ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 24 | 30 |
| 12 | | Dalla ... ... ... | 3577 | 2075 | 5652 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 7 | 15 | 22 |
| | | TOTAL... | 55612 | 33065 | 88677 | 49 | 18 | 67 | 5 | 1 | 6 | 3 | 2 | 5 | 6 | 3 | 9 | 4 | 2 | 6 | 314 | 396 | 710 |

## ANNUAL FORM NO. III.—*(Concluded.)*

*Deaths registered from different Causes in the different Quarters of Rangoon, during the year* 1869.

| 1 | 2 | 3 | 4 | | | 11 | | | 12 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Total Deaths from all causes. | | | Ratio of Deaths per 1000 of population. | | | | | | | |
| | | | | | | | | | Cholera. | Small pox. | Fever. | Bowel Complaints. | Injuries. | From all Causes. | | |
| | | | M. | F. | T. | M. | F. | T. | | | | | | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... ... | 7463 | 7867 | 15330 | 163 | 122 | 285 | ·0 | ·06 | 7·24 | ·78 | ·32 | 21·8 | 15·5 | 18·5 |
| 2 | | Alongyua ... ... | 2635 | 1207 | 3842 | 28 | 25 | 53 | 0 | 1·33 | 5·20 | ·52 | ·26 | 10·6 | 20·7 | 13·7 |
| 3 | | Tarokdan ... ... ... | 5546 | 1811 | 7357 | 109 | 40 | 149 | 0 | 2·71 | 11·14 | ·95 | ·40 | 19·6 | 22·0 | 20·2 |
| 4 | | Pabaidan... ... ... | 4977 | 855 | 5832 | 44 | 24 | 68 | 0 | 0 | 6·51 | ·85 | ·17 | 8.8 | 28·0 | 11·5 |
| 5 | | Kyouktada ... ... ... | 4909 | 443 | 5352 | 111 | 40 | 151 | ·01 | 1·11 | 16·62 | 1·49 | ·37 | 22·6 | 90·2 | 28·2 |
| 6 | | Pansodan ... ... | 5170 | 4041 | 9211 | 54 | 33 | 87 | 0 | ·10 | 4·12 | .21 | ·10 | 10.4 | 8·1 | 9·4 |
| 7 | | Mengala ... ... | 2163 | 674 | 2837 | 25 | 12 | 37 | 0 | 1·40 | 6·34 | 0 | ·70 | 11·5 | 17·8 | 13·0 |
| 8 | | Botatoung ... ... | 2968 | 1637 | 4605 | 87 | 56 | 143 | 0 | ·65 | 16·28 | ·43 | ·65 | 29·3 | 34·2 | 31·0 |
| 9 | | Poozoondoung. ... ... | 6959 | 5397 | 12356 | 180 | 129 | 309 | 0 | 1·78 | 10·68 | 1·28 | ·24 | 26·0 | 23·9 | 25·0 |
| 10 | | Yambonquin.. ... ... | 5640 | 4331 | 9371 | 177 | 145 | 322 | ·01 | 10·67 | 9·60 | ·96 | ·74 | 31·3 | 33·4 | 32·3 |
| 11 | | Myatada ... ... | 3605 | 2727 | 6332 | 47 | 42 | 89 | 0 | ·47 | 8·84 | 0 | 0 | 17·4 | 15·4 | 14·9 |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 30 | 31 | 61 | 0 | ·88 | 5·30 | ·53 | 1·76 | 8·3 | 14·9 | 10·7 |
| | | TOTAL... | 55612 | 33065 | 88677 | 1055 | 699 | 1754 | ·02 | 1·91 | 8·78 | ·75 | ·29 | 18·9 | 21·1 | 19·7 |

## ANNUAL FORM NO. IV.

*Deaths registered according to Age in the different Quarters of Rangoon during the year* 1869.

| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Born Dead. | | | Under one year. | | | 1 to 5. | | | 6 to 15. | | | 16 to 25. | | | 26 to 35. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... ... ... ... | 1 | 0 | 1 | 21 | 8 | 29 | 37 | 21 | 58 | 12 | 10 | 22 | 20 | 8 | 28 | 28 | 22 | 50 |
| 2 | | Alongyua ... ... ... ... ... | 2 | 1 | 3 | 1 | 2 | 3 | 8 | 7 | 15 | 0 | 0 | 0 | 5 | 2 | 7 | 6 | 4 | 10 |
| 3 | | Tarokdan ... ... ... ... | 0 | 0 | 0 | 12 | 1 | 13 | 10 | 12 | 22 | 7 | 3 | 10 | 20 | 9 | 29 | 26 | 4 | 30 |
| 4 | | Pabaidan ... ... ... ... ... | 1 | 1 | 2 | 2 | 2 | 4 | 3 | 3 | 6 | 4 | 0 | 4 | 7 | 3 | 10 | 14 | 6 | 20 |
| 5 | | Kyouktada ... ... ... ... | 0 | 1 | 1 | 7 | 6 | 13 | 9 | 4 | 13 | 8 | 1 | 9 | 26 | 11 | 37 | 28 | 9 | 37 |
| 6 | | Ransodan ... ... ... ... ... | 2 | 2 | 4 | 9 | 3 | 12 | 10 | 5 | 15 | 2 | 7 | 9 | 5 | 1 | 6 | 11 | 1 | 12 |
| 7 | | Mengala... ... ... ... ... | 1 | 0 | 1 | 1 | 5 | 6 | 4 | 2 | 6 | 2 | 1 | 3 | 6 | 1 | 7 | 4 | 1 | 5 |
| 8 | | Botatoung... ... ... ... ... | 1 | 0 | 1 | 10 | 2 | 12 | 19 | 22 | 41 | 3 | 8 | 11 | 16 | 5 | 21 | 23 | 7 | 30 |
| 9 | | Poozoondoung ... ... ... | 1 | 1 | 2 | 20 | 17 | 37 | 46 | 40 | 86 | 10 | 13 | 23 | 20 | 17 | 37 | 26 | 13 | 39 |
| 10 | | Yambonquin ... ... ... ... | 1 | 1 | 2 | 17 | 21 | 38 | 61 | 48 | 109 | 15 | 13 | 28 | 11 | 15 | 26 | 24 | 16 | 40 |
| 11 | | Myatada... ... ... ... ... | 0 | 0 | 0 | 2 | 0 | 2 | 8 | 5 | 13 | 4 | 4 | 8 | 4 | 6 | 10 | 9 | 13 | 22 |
| 12 | | Dalla ... ... ... ... ... ... | 0 | 0 | 0 | 2 | 1 | 3 | 4 | 5 | 9 | 1 | 1 | 2 | 6 | 7 | 13 | 7 | 4 | 11 |
| | | Total... | 10 | 7 | 17 | 104 | 68 | 172 | 119 | 174 | 393 | 68 | 61 | 129 | 146 | 85 | 231 | 206 | 100 | 306 |

ANNUAL FORM NO. IV.—*(Concluded)*

*Deaths registered according to Age in the different Quarters of Rangoon during the year* 1869.

| 1 | 2 | 3 | 4 | | | | | | | | | 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | 36 to 45. | | | 46 to 60. | | | Over 60. | | | Total. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne... ... | 15 | 6 | 21 | 13 | 17 | 30 | 16 | 30 | 46 | 163 | 122 | 285 |
| 2 | | Alongyua... ... | 2 | 1 | 3 | 3 | 4 | 7 | 1 | 4 | 5 | 28 | 25 | 53 |
| 3 | | Tarokdan ... | 13 | 2 | 15 | 14 | 2 | 16 | 7 | 7 | 14 | 109 | 40 | 149 |
| 4 | | Pabaidan ... | 4 | 4 | 8 | 6 | 3 | 9 | 3 | 2 | 5 | 44 | 24 | 68 |
| 5 | | Kyouktada. ... | 18 | 2 | 20 | 9 | 4 | 13 | 6 | 2 | 8 | 111 | 40 | 151 |
| 6 | | Pansodan ... | 4 | 2 | 6 | 3 | 2 | 5 | 8 | 10 | 18 | 54 | 33 | 87 |
| 7 | | Mengala ... | 5 | 0 | 5 | 2 | 1 | 3 | 0 | 1 | 1 | 25 | 12 | 37 |
| 8 | | Botatoung ... | 7 | 4 | 11 | 5 | 1 | 6 | 3 | 7 | 10 | 87 | 56 | 143 |
| 9 | | Poozoondoung... ... | 21 | 9 | 30 | 21 | 7 | 28 | 15 | 12 | 27 | 180 | 129 | 309 |
| 10 | | Yambonquin.. ... | 15 | 7 | 22 | 20 | 9 | 29 | 13 | 15 | 28 | 177 | 145 | 322 |
| 11 | | Myatada ... | 5 | 6 | 11 | 9 | 1 | 10 | 6 | 7 | 13 | 47 | 42 | 89 |
| 12 | | Dalla. ... | 3 | 1 | 4 | 6 | 7 | 13 | 1 | 5 | 6 | 30 | 31 | 61 |
| | | Total... | 112 | 44 | 156 | 111 | 58 | 169 | 79 | 102 | 181 | 1055 | 699 | 1754 |

# ANNUAL FORM NO. V.

*Deaths registered from Cholera in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May. | | | June. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 4 | | Pabaidan .. | 4977 | 855 | 5832 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 1 | 0 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7 | | Mengala ... | 2163 | 674 | 2837 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | | Total... | 55612 | 33065 | 88677 | 1 | 0 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |

## ANNUAL FORM NO. V.—*(Concluded.)*

*Deaths registered from Cholera in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | July. | | | Augt. | | | Septr. | | | Octr. | | | Novr. | | | Decr. | | | Total. | | | No. |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | Total | |
| 1 | Rangoon. | Kemendyne ... ... | 7463 | 7867 | 15330 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 3 | | Tarokdan ... ... | 5546 | 1811 | 7357 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 5 | | Kyouktada ... ... | 4909 | 443 | 5352 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 0 | 1 | |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 7 | | Mengala ... ... | 2163 | 674 | 2837 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 8 | | Bototoung ... | 2968 | 1637 | 4605 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 9 | | Poozoondoung... ... | 6959 | 5397 | 12356 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 0 | 1 | ... | ... | ... | 1 | 0 | 1 | |
| 11 | | Myatada ... ... | 3605 | 2727 | 6332 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 12 | | Dalla ... ... | 3577 | 2075 | 5652 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| | | Total... | 55612 | 33065 | 88677 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 0 | 1 | ... | ... | ... | 2 | 0 | 2 | |

# ANNUAL FORM NO. VI.

*Deaths Registered from Small Pox in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May. | | |
| | | | M. | F. | Total. | M. | F. | T. | M | F. | T. | M | F. | T. | M | F. | T. | M | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 2 | 0 | 2 | 10 | 3 | 13 | 1 | 3 | 4 | 1 | 0 | 1 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 2 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 1 | 2 | 3 | 6 | 5 | 11 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 17 | 12 | 29 | 24 | 20 | 44 | 8 | 10 | 18 | 4 | 2 | 6 | 0 | 0 | 0 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 12 | | Dalla | 3577 | 2075 | 5652 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| | | Total... | 55612 | 33065 | 88677 | 20 | 15 | 35 | 34 | 27 | 61 | 25 | 16 | 41 | 6 | 12 | 18 | 4 | 0 | 4 |

ANNUAL FORM NO. VI.—*(Continued.)*

*Deaths Registered from Small Pox in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | June. | | | July. | | | Augt. | | | Sept. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Total... | 55612 | 33065 | 88677 | 1 | 1 | 2 | 3 | 5 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |

ANNUAL FORM NO. VI.—*(Concluded.)*

*Deaths Registered from Small Pox in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Oct. | | | Novr. | | | Decr. | | | TOTAL. | | | No. |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 6 | 20 | |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | : | 3 | |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 11 | 11 | 22 | |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 | 46 | 100 | |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | |
| | | Total... | 55612 | 33065 | 88677 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 93 | 77 | 170 | |

## ANNUAL FORM NO. VII.

*Deaths registered from Fever in the different Quarters of Rangoon, during each Month of the year 1869.*

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May. | | | June. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 8 | 2 | 10 | 4 | 1 | 5 | 10 | 2 | 12 | 9 | 5 | 14 | 5 | 3 | 8 | 3 | 2 | 5 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 0 | 1 | 1 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 7 | 1 | 8 | 4 | 0 | 4 | 3 | 1 | 4 | 10 | 2 | 12 | 7 | 0 | 7 | 5 | 2 | 7 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 1 | 1 | 2 | 5 | 0 | 5 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 1 | 3 | 0 | 1 | 1 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 7 | 0 | 7 | 4 | 0 | 4 | 6 | 1 | 7 | 8 | 1 | 9 | 4 | 1 | 5 | 11 | 0 | 11 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 2 | 1 | 3 | 0 | 0 | 0 | 6 | 3 | 9 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 3 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 5 | 0 | 5 | 2 | 2 | 4 | 3 | 0 | 3 | 8 | 4 | 12 | 3 | 2 | 5 | 6 | 3 | 9 |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 6 | 1 | 7 | 7 | 0 | 7 | 6 | 2 | 8 | 9 | 1 | 10 | 7 | 0 | 7 | 5 | 5 | 10 |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 15 | 0 | 15 | 3 | 1 | 4 | 6 | 2 | 8 | 4 | 0 | 4 | 4 | 1 | 5 | 1 | 3 | 4 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 5 | 2 | 7 | 5 | 1 | 6 | 3 | 2 | 5 | 2 | 1 | 3 | 3 | 0 | 3 | 6 | 2 | 8 |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 3 |
| | | Total... | 55612 | 33065 | 88677 | 57 | 7 | 64 | 39 | 5 | 44 | 44 | 11 | 55 | 56 | 17 | 73 | 36 | 10 | 46 | 48 | 23 | 71 |

## ANNUAL FORM NO. VII.—*(Concluded.)*

*Deaths registered from Fever in the different Quarters of Rangoon, during each Month of the year 1869.*

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | July. | | | Augt. | | | Septr. | | | Octr. | | | Novr. | | | Decr. | | | Total. | | | No. |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | Total | |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 7 | 2 | 9 | 8 | 3 | 11 | 3 | 2 | 5 | 9 | 4 | 13 | 6 | 6 | 12 | 6 | 1 | 7 | 78 | 33 | 111 | |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 2 | 2 | 2 | 1 | 3 | 0 | 1 | 1 | 4 | 0 | 4 | 0 | 1 | 1 | 3 | 1 | 4 | 12 | 8 | 20 | |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 2 | 0 | 2 | 4 | 2 | 6 | 5 | 2 | 7 | 11 | 1 | 12 | 4 | 1 | 5 | 6 | 2 | 8 | 68 | 14 | 82 | |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 1 | 2 | 3 | 1 | 2 | 3 | 7 | 0 | 7 | 4 | 1 | 5 | 3 | 0 | 3 | 0 | 2 | 2 | 28 | 10 | 38 | |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 8 | 2 | 10 | 4 | 3 | 7 | 8 | 4 | 12 | 3 | 1 | 4 | 9 | [illegible] | 9 | 4 | 0 | 4 | 76 | 13 | 89 | |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 1 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 4 | 3 | 1 | 4 | 2 | 1 | 3 | 2 | 2 | 4 | 25 | 13 | 38 | |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 1 | 0 | 1 | 3 | 1 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 2 | 16 | 2 | 18 | |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 11 | 2 | 13 | 6 | 2 | 8 | 3 | 1 | 4 | 3 | 1 | 4 | 3 | 2 | 5 | 3 | 0 | 3 | 56 | 19 | 75 | |
| 9 | | Poozoondoung... | 6959 | 5397 | 12356 | 22 | 8 | 30 | 5 | 5 | 10 | 11 | 5 | 16 | 9 | 0 | 9 | 9 | 6 | 15 | 2 | 1 | 3 | 98 | 34 | 132 | |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 2 | 1 | 3 | 5 | 3 | 8 | 7 | 1 | 8 | 10 | 7 | 17 | 2 | 6 | 8 | 5 | 1 | 6 | 64 | 26 | 90 | |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 3 | 3 | 6 | 1 | 2 | 3 | 0 | 0 | 0 | 5 | 1 | 6 | 3 | 2 | 5 | 3 | 1 | 4 | 39 | 17 | 56 | |
| 12 | | Dalla ... ... | 3577 | 2075 | 5652 | 6 | 5 | 11 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 2 | 3 | 0 | 1 | 1 | 19 | 11 | 30 | |
| | | Total... | 55612 | 33065 | 88677 | 64 | 28 | 92 | 43 | 25 | 68 | 50 | 18 | 68 | 63 | 17 | 80 | 43 | 27 | 70 | 36 | 12 | 48 | 579 | 200 | 779 | |

## ANNUAL FORM NO. VIII.

*Deaths registered from Bowel Complaints in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Jany. | | | Feby. | | | March. | | | April. | | | May. | | | June. | | |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 2 |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 0 | 2 |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 3 | 0 | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 4 | 5 | 1 | 0 | 1 |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| | | Total... | 55612 | 33065 | 88677 | 4 | 1 | 5 | 2 | 2 | 4 | 4 | 0 | 4 | 2 | 0 | 2 | 6 | 5 | 12 | 9 | 2 | 11 |

## ANNUAL FORM NO. VIII.—*(Concluded.)*

*Deaths registered from Bowel Complaints in the different Quarters of Rangoon, during each Month of the year* 1869.

| 1 | 2 | 3 | 4 | | | 5 | | | | | | | | | | | | | | | | | | 6 | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | July. | | | Augt. | | | Sept. | | | Oct. | | | Nov. | | | Decr. | | | Total. | | | No. |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | |
| 1 | Rangoon. | Kemendyne ... | 7463 | 7867 | 15330 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 8 | 4 | 12 | |
| 2 | | Alongyua ... | 2635 | 1207 | 3842 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | |
| 3 | | Tarokdan ... | 5546 | 1811 | 7357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 3 | 7 | |
| 4 | | Pabaidan ... | 4977 | 855 | 5832 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | |
| 5 | | Kyouktada ... | 4909 | 443 | 5352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 8 | |
| 6 | | Pansodan ... | 5170 | 4041 | 9211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | |
| 7 | | Mengala ... | 2163 | 674 | 2837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8 | | Botatoung ... | 2968 | 1637 | 4605 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | |
| 9 | | Poozoondoung ... | 6959 | 5397 | 12356 | 2 | 1 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 12 | 5 | 17 | |
| 10 | | Yambonquin ... | 5640 | 4331 | 9971 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 8 | 1 | 9 | |
| 11 | | Myatada ... | 3605 | 2727 | 6332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 12 | | Dalla ... | 3577 | 2075 | 5652 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | |
| | | Total... | 55612 | 33065 | 88677 | 9 | 2 | 11 | 3 | 1 | 4 | 2 | 1 | 3 | 1 | 2 | 3 | 1 | 1 | 2 | 6 | 0 | 6 | 49 | 18 | 67 | |

## ANNUAL FORM NO. IX.

*Comparative Statement of Births, Deaths and Marriages, registered in the different Quarters of Rangoon during the year 1869.*

| 1 | 2 | 3 | 4 | | | 5 | | | 6 | | | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Town. | Names of Quarters. | Population. | | | Number of Births Registered. | | | Ratio of Births per 1000 of population. | | | Excess of Births over Deaths per 1000 of population. | Excess of Deaths over Births per 1000 of population. | Number of Marriages Registered. | Ratio of Marriages per 1000 of population. |
| | | | M. | F. | T. | M. | F. | T. | M. | F. | T. | | | | |
| 1 | Rangoon. | Kemendyne - - | 7463 | 7867 | 15330 | 164 | 114 | 278 | 21·46 | 14·49 | 18·13 | 0 | 7 | Not Registered. | Unknown. |
| 2 | | Alongyua - - - | 2635 | 1207 | 3842 | 23 | 32 | 55 | 8·72 | 26·51 | 14·52 | 2 | 0 | | |
| 3 | | Tarokdan - - - | 5546 | 1811 | 7357 | 75 | 57 | 132 | 13·52 | 31·60 | 17·94 | 0 | 17 | | |
| 4 | | Pabaidan - - - | 4977 | 855 | 5832 | 32 | 22 | 54 | 6·42 | 25·73 | 9·26 | 0 | 14 | | |
| 5 | | Kyouktada - - | 4909 | 443 | 5352 | 50 | 46 | 96 | 10·16 | 103·83 | 17·95 | 0 | 32 | | |
| 6 | | Pansodan - - - | 5170 | 4041 | 9211 | 61 | 48 | 109 | 11·81 | 11·87 | 11·83 | 22 | 0 | | |
| 7 | | Mengala - - - | 2163 | 674 | 2837 | 30 | 12 | 42 | 13·87 | 17·80 | 14·91 | 5 | 0 | | |
| 8 | | Botatoung - - | 2968 | 1637 | 4605 | 42 | 43 | 85 | 14·15 | 7·12 | 18·45 | 0 | 58 | | |
| 9 | | Poozoondoung - - | 6959 | 5397 | 12356 | 102 | 80 | 182 | 14·64 | 14·82 | 14·72 | 0 | 127 | | |
| 10 | | Yambonquin - - | 5640 | 4331 | 9971 | 101 | 94 | 195 | 17·90 | 21·70 | 19·55 | 0 | 123 | | |
| 11 | | Myatada - - - | 3605 | 2727 | 6332 | 36 | 29 | 65 | 9.98 | 10·63 | 10·26 | 0 | 24 | | |
| 12 | | Dalla - - - | 3577 | 2075 | 5652 | 64 | 61 | 125 | 17·86 | 9·98 | 22·11 | 64 | 0 | | |
| | | Total..... | 55612 | 33065 | 88677 | 780 | 638 | 1418 | 14.02 | 19.02 | 15·99 | 93 | 402 | | |

FORM A.

*Return of Births in the Seventeen Registration towns of British Burma for the year ending 31st December 1869. Population 322,728 Souls.*

| MONTHS. | Sex. | Races. | | | | | | | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese. | Arakanese. | Karens. | Shans. | Chinese. | Natives of India. | Other Races. | | |
| January 1868 ... ... | Males. | 318 | 35 | 0 | 2 | 9 | 32 | 15 | 419 | |
| | Females. | 322 | 18 | 1 | 1 | 9 | 24 | 12 | 387 | |
| February " ... ... | Males. | 306 | 26 | 0 | 2 | 9 | 18 | 19 | 380 | |
| | Females. | 299 | 22 | 0 | 3 | 10 | 30 | 12 | 376 | |
| March " ... ... | Males. | 319 | 24 | 0 | 11 | 17 | 19 | 13 | 403 | |
| | Females. | 294 | 19 | 0 | 3 | 10 | 24 | 19 | 369 | |
| April " ... ... | Males. | 355 | 21 | 0 | 3 | 10 | 22 | 12 | 423 | |
| | Females. | 329 | 13 | 0 | 2 | 8 | 20 | 10 | 382 | |
| May " ... ... | Males. | 307 | 20 | 1 | 2 | 15 | 24 | 28 | 397 | |
| | Females. | 299 | 27 | 0 | 7 | 14 | 16 | 10 | 373 | |
| June " ... ... | Males. | 328 | 20 | 0 | 9 | 10 | 20 | 24 | 411 | |
| | Females. | 305 | 23 | 0 | 5 | 14 | 19 | 15 | 381 | |
| July " ... ... | Males. | 325 | 28 | 1 | 4 | 14 | 31 | 14 | 417 | |
| | Females. | 296 | 33 | 0 | 5 | 11 | 29 | 21 | 395 | |
| August " ... ... | Males. | 327 | 29 | 1 | 3 | 20 | 33 | 14 | 427 | |
| | Females. | 294 | 20 | 1 | 8 | 15 | 20 | 19 | 377 | |
| September " ... ... | Males. | 375 | 22 | 0 | 7 | 10 | 25 | 8 | 447 | |
| | Females. | 290 | 21 | 0 | 3 | 4 | 26 | 19 | 363 | |
| October " ... ... | Males. | 316 | 22 | 0 | 11 | 13 | 34 | 12 | 408 | |
| | Females. | 267 | 17 | 0 | 5 | 15 | 24 | 18 | 346 | |
| November " ... ... | Males. | 339 | 31 | 0 | 11 | 17 | 22 | 20 | 440 | |
| | Females. | 325 | 30 | 0 | 11 | 8 | 25 | 15 | 414 | |
| December " ... ... | Males. | 355 | 24 | 0 | 4 | 13 | 22 | 10 | 428 | |
| | Females. | 329 | 20 | 0 | 7 | 10 | 32 | 10 | 408 | |

FORM B.

*Return of Deaths in the Seventeen Registration Towns of British Burma for the year ending 31st December 1869. Population 322,728 Souls.*

| MONTHS. | Sex. | RACES. | | | | | | | Total Males and Females. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Burmese. | Arakanese. | Karens. | Shans. | Chinese. | Natives of India. | Other races. | | |
| January 1869. ..... | Males. | 313 | 26 | 1 | 12 | 5 | 66 | 16 | 439 | |
| | Females | 229 | 20 | 0 | 9 | 1 | 10 | 13 | 282 | |
| February ...do... ... | Males. | 291 | 60 | 1 | 4 | 10 | 59 | 8 | 423 | |
| | Females. | 224 | 38 | 0 | 1 | 0 | 24 | 7 | 294 | |
| March ...do... ... | Males. | 317 | 58 | 1 | 7 | 15 | 73 | 17 | 488 | |
| | Females. | 268 | 30 | 0 | 3 | 2 | 14 | 14 | 331 | |
| April ...do... ... | Males. | 306 | 101 | 2 | 8 | 10 | 148 | 16 | 591 | |
| | Females. | 255 | 69 | 0 | 5 | 1 | 25 | 9 | 364 | |
| May ... ...do... ... | Males. | 246 | 41 | 0 | 5 | 13 | 71 | 21 | 395 | |
| | Females. | 203 | 30 | 0 | 6 | 3 | 8 | 10 | 262 | |
| June... ...do... ... | Males. | 259 | 36 | 2 | 13 | 18 | 51 | 14 | 393 | |
| | Females. | 253 | 28 | 1 | 6 | 8 | 7 | 20 | 323 | |
| July... ...do... ... | Males. | 360 | 49 | 2 | 9 | 17 | 57 | 17 | 511 | |
| | Females. | 326 | 28 | 1 | 3 | 8 | 23 | 23 | 412 | |
| August ...do... ... | Males. | 349 | 42 | 2 | 8 | 20 | 55 | 19 | 495 | |
| | Females. | 330 | 22 | 1 | 5 | 10 | 18 | 16 | 402 | |
| September...do... ... | Males. | 281 | 23 | 1 | 4 | 10 | 43 | 19 | 381 | |
| | Females. | 250 | 21 | 0 | 2 | 3 | 18 | 20 | 314 | |
| October ...do... ... | Males. | 299 | 17 | 2 | 5 | 21 | 51 | 13 | 408 | |
| | Females. | 255 | 13 | 0 | 2 | 9 | 22 | 7 | 308 | |
| November...do... ... | Males. | 300 | 17 | 0 | 6 | 18 | 52 | 12 | 406 | |
| | Females. | 265 | 21 | 0 | 1 | 5 | 15 | 23 | 330 | |
| December...do... ... | Males. | 349 | 31 | 2 | 7 | 20 | 28 | 24 | 461 | |
| | Females. | 291 | 23 | 0 | 5 | 4 | 23 | 10 | 356 | |

FORM C.

*Return showing the supposed or ascertained causes of Deaths among the several Races in the Seventeen Registration Towns of British Burma, for the year ending 31st December 1869. Population 322,728.*

| Nature of Disease. | Burmese. | | | Arakanese. | | | Karens. | | | Shans. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. |
| Fevers ... ... ... ... | 1031 | 632 | 1663 | 125 | 90 | 215 | 3 | 2 | 5 | 25 | 16 | 41 |
| Cholera ... ... ... ... | 216 | 174 | 390 | 212 | 139 | 351 | 3 | 0 | 3 | 6 | 0 | 6 |
| Small Pox... ... ... ... | 446 | 398 | 844 | 38 | 21 | 59 | 1 | 0 | 1 | 9 | 2 | 11 |
| Bowel Complaints ... ... ... | 299 | 145 | 444 | 1 | 3 | 4 | 2 | 0 | 2 | 18 | 3 | 21 |
| Suicide ... ... ... ... | 9 | 3 | 12 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Wounding... ... ... ..... | 11 | 2 | 13 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Accident ... ... ... ... | 36 | 12 | 48 | 1 | 2 | 3 | 0 | 0 | 0 | 2 | 1 | 3 |
| Snake bite or killed by wild beasts. | 6 | 2 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All other causes... ... ... ... | 1616 | 1741 | 3397 | 112 | 89 | 201 | 7 | 1 | 8 | 26 | 26 | 52 |
| Total..... | 3670 | 3149 | 6819 | 490 | 345 | 835 | 16 | 3 | 19 | 88 | 48 | 136 |

FORM C.—(*Concluded.*)

*Return showing the supposed or ascertained causes of Deaths among the several Races in the Seventeen Registration Towns of British Burma, for the year ending* 31*st December* 1869. *Population* 322,728.

| Nature of Disease. | Chinese. | | | Natives of India. | | | Other Races. | | | Total. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | |
| Fevers ..... ..... | 62 | 11 | 73 | 282 | 62 | 344 | 50 | 24 | 74 | 1578 | 837 | 2415 | |
| Cholera ..... ..... | 11 | 4 | 15 | 180 | 36 | 216 | 24 | 20 | 44 | 652 | 373 | 1025 | |
| Small Pox..... ..... | 40 | 16 | 56 | 16 | 4 | 20 | 20 | 26 | 46 | 570 | 467 | 1037 | |
| Bowel Complaints ..... | 19 | 4 | 23 | 99 | 7 | 106 | 16 | 13 | 29 | 455 | 175 | 630 | |
| Suicide..... ..... ..... | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 14 | 4 | 18 | |
| Wounding..... ..... | 1 | 0 | 1 | 5 | 0 | 5 | 1 | 1 | 2 | 20 | 3 | 23 | |
| Accident ..... ..... | 3 | 0 | 3 | 9 | 4 | 13 | 2 | 0 | 2 | 53 | 19 | 72 | |
| Snake bite or killed by wild beasts. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 7 | 2 | 9 | |
| All other causes... ..... | 39 | 19 | 58 | 161 | 94 | 255 | 82 | 88 | 170 | 2042 | 2098 | 4140 | |
| Total..... | 177 | 54 | 231 | 754 | 207 | 961 | 196 | 172 | 368 | 5391 | 3978 | 9369 | |

## FORM D.

*Return showing the Deaths at various ages among the several Races in the Seventeen Registration Towns of British Burma, for the year ending 31st December 1869. Population 322.728.*

| AGES. | Burmese. | | | Arakanese. | | | Karens. | | | Shans. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. |
| Still Born ... ... | 123 | 98 | 221 | 9 | 8 | 17 | 0 | 0 | 0 | 5 | 2 | 7 |
| Under 1 Month ... ... | 160 | 105 | 265 | 29 | 19 | 48 | 0 | 0 | 0 | 1 | 1 | 2 |
| do. 6 „ ... ... | 328 | 234 | 562 | 19 | 15 | 34 | 3 | 1 | 4 | 4 | 1 | 5 |
| do. 1 Year ... ... | 162 | 155 | 317 | 11 | 9 | 20 | 0 | 0 | 0 | 3 | 1 | 4 |
| 1 to 5 Years.. ... | 694 | 630 | 1324 | 73 | 55 | 128 | 0 | 0 | 0 | 9 | 6 | 15 |
| 5 to 10 „ ... ... ... | 307 | 252 | 559 | 77 | 54 | 131 | 0 | 0 | 0 | 6 | 1 | 7 |
| 10 to 15 „ ... ... | 121 | 86 | 207 | 15 | 11 | 26 | 0 | 0 | 0 | 0 | 3 | 3 |
| 15 to 20 „ ... ... ... | 147 | 119 | 266 | 14 | 13 | 27 | 0 | 1 | 1 | 6 | 2 | 8 |
| 20 to 25 „ ... ... | 180 | 164 | 344 | 58 | 48 | 106 | 1 | 0 | 1 | 7 | 3 | 10 |
| 25 to 30 „ ... ... ... | 240 | 198 | 438 | 32 | 27 | 59 | 2 | 0 | 2 | 14 | 7 | 21 |
| 30 to 35 „ ... ... | 176 | 140 | 316 | 27 | 14 | 41 | 4 | 0 | 4 | 6 | 3 | 9 |
| 35 to 40 „ ... ... ... | 216 | 154 | 370 | 34 | 12 | 46 | 2 | 0 | 2 | 9 | 5 | 14 |
| 40 to 45 „ ... ... | 133 | 106 | 239 | 9 | 7 | 16 | 1 | 0 | 1 | 4 | 1 | 5 |
| 45 to 50 „ ... ... ... | 110 | 87 | 197 | 12 | 7 | 19 | 0 | 0 | 0 | 4 | 5 | 9 |
| 50 to 55 „ ... ... | 84 | 75 | 159 | 9 | 4 | 13 | 0 | 1 | 1 | 1 | 3 | 4 |
| 55 to 60 „ ... ... ... | 108 | 93 | 201 | 13 | 7 | 20 | 2 | 0 | 2 | 2 | 0 | 2 |
| 60 to 65 „ .. ... | 87 | 96 | 183 | 10 | 8 | 18 | 0 | 0 | 0 | 1 | 0 | 1 |
| 65 to 70 „ ... .. ... | 95 | 115 | 210 | 18 | 14 | 32 | 0 | 0 | 0 | 1 | 1 | 2 |
| 75 and Upwards... ... | 199 | 242 | 441 | 21 | 13 | 34 | 1 | 0 | 1 | 5 | 3 | 8 |
| Total... | 3670 | 3149 | 6819 | 490 | 345 | 835 | 16 | 3 | 19 | 88 | 48 | 136 |

FORM D.—*(Concluded.)*

*Return showing the Deaths at various ages among the several Races in the Seventeen Registration Towns of British Burma, for the year ending 31st December 1869. Population 322,728.*

| AGES. | Chinese. | | | Natives of India. | | | Other Races. | | | TOTAL. | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Total. | Males. | Females. | Total. | Males. | Females. | Total. | Males | Females. | Total. | |
| Still Born ... ... | 2 | 3 | 5 | 7 | 7 | 14 | 6 | 7 | 13 | 152 | 125 | 277 | |
| Under 1 Month ... | 4 | 4 | 8 | 15 | 10 | 25 | 5 | 9 | 14 | 214 | 148 | 362 | |
| do. 6 „ ... ... | 9 | 6 | 15 | 16 | 8 | 24 | 14 | 18 | 32 | 393 | 283 | 676 | |
| do. 1 Year ... | 6 | 2 | 8 | 7 | 7 | 14 | 12 | 7 | 19 | 201 | 181 | 382 | |
| 1 to 5 Years ... | 25 | 9 | 34 | 24 | 18 | 42 | 31 | 28 | 59 | 856 | 746 | 1602 | |
| 5 to 10 „ ... ... | 14 | 15 | 29 | 17 | 8 | 25 | 17 | 18 | 35 | 438 | 348 | 786 | |
| 10 to 15 „ ... ... | 6 | 4 | 10 | 15 | 8 | 23 | 8 | 9 | 17 | 165 | 121 | 286 | |
| 15 to 20 „ ... ... | 6 | 3 | 9 | 61 | 14 | 75 | 8 | 7 | 15 | 242 | 159 | 401 | |
| 20 to 25 „ ... ... | 14 | 0 | 14 | 108 | 21 | 129 | 7 | 4 | 11 | 365 | 350 | 615 | |
| 25 to 30 „ ... ... | 22 | 2 | 24 | 158 | 33 | 191 | 17 | 8 | 25 | 485 | 275 | 760 | |
| 30 to 35 „ ... ... | 19 | 2 | 21 | 119 | 25 | 144 | 15 | 6 | 21 | 366 | 190 | 556 | |
| 35 to 40 „ ... ... | 9 | 0 | 9 | 70 | 14 | 84 | 16 | 7 | 23 | 356 | 192 | 548 | |
| 40 to 45 „ ... ... | 10 | 2 | 12 | 49 | 4 | 53 | 8 | 6 | 14 | 214 | 126 | 340 | |
| 45 to 50 „ ... ... | 13 | 0 | 13 | 35 | 7 | 42 | 9 | 3 | 12 | 183 | 109 | 292 | |
| 50 to 55 „ ... ... | 1 | 0 | 1 | 9 | 4 | 13 | 1 | 4 | 5 | 105 | 91 | 196 | |
| 55 to 60 „ ... ... | 5 | 1 | 6 | 13 | 7 | 20 | 4 | 5 | 9 | 147 | 113 | 260 | |
| 60 to 65 „ ... ... | 4 | 0 | 4 | 5 | 4 | 9 | 3 | 4 | 7 | 110 | 112 | 222 | |
| 65 to 70 „ ... ... | 4 | 0 | 4 | 10 | 3 | 13 | 4 | 6 | 10 | 132 | 138 | 270 | |
| 75 and Upwards. ... | 4 | 1 | 5 | 16 | 5 | 21 | 11 | 16 | 27 | 257 | 280 | 537 | |
| Total... | 177 | 54 | 231 | 754 | 207 | 961 | 196 | 172 | 368 | 5391 | 3978 | 9369 | |

# APPENDIX.

From A. J. Cowie Esq., Sanitary Commissioner for British Burma, to Horace Spearman, Esq., Assistant Secretary to the Chief Commissioner, No 98, Dated, Camp Prome, 19th February 1869.

Subject.
Small Pox at Prome.

I have the honour to forward a copy of a report from Dr. Macdonald to my address, on the subject of the present outbreak of Small Pox in the town of Prome, and the progress the practice of Vaccination has made.

2. This paper together with the Civil Surgeon's Annual Report brings the history of the Epidemic up to date.

3. I agree with Dr. Macdonald's remarks on Vaccination. The cases which I have seen as successful here, appear to have had some poison engrafted into the system besides vaccine lymph.

4. Dr. Macdonald notes one case of successful Vaccination which was followed by Small Pox and terminated fatally. The people quote this case against the practice of Vaccination.

5. Such a case as this and the fact that, all operated upon more or less break out with boils and unhealthy sores over the body has, I believe, brought the practice of Vaccination into great disrepute among the people.

6. Prome is at present without a Doctor. The Hospital is in charge of a Native Bengal Dresser. No time should be lost in supplying Dr. Macdonald's place.

7. Every effort is being made by Captain Street, the Deputy Commissioner, to keep the town clean; and he heartily enters into all my suggestions for the improvement of the Public Health.

8. I received your Telegram last night informing me that three Native Doctors would be sent to Prome. On their arrival I will do my best to get them into active work. I only desire that good Vaccine lymph may be forwarded and not the filthy spurious virus which has been lately received.

9. Should the lymph you forward prove to be bad I shall cease to attempt the extension of Vaccination.

10. Although I cannot speak for certain, I think the disease is on the decline.

11. Further information on the progress of the Epidemic will be forwarded to you regularly.

From Dr. K. N. MACDONALD, Civil Surgeon of Prome, to the Sanitary Commissioner for British Burma, No. 134, Dated Prome, 19th February, 1869.

SUBJECT.

Dr. Macdonald's report on Small Pox and Vaccination at Prome.

I have the honor to submit the following remarks with reference to the epidemic of Small Pox which has been prevalent in Prome during the past year, and on the prophylactic influences of Vaccination in modifying and retarding the progress of the disease.

1. This epidemic made its first appearance in Prome in February 1867, having been imported at that season of the year from Upper Burma by some itinerant Shans who settled in the Naween portion of the town. The outbreak turned out to be of a mild type, and though it was more or less prevalent during the rains and in the succeeding cold weather only 39 deaths resulted from it.

2. Vaccination was of course carried on with vigor immediately after the rains, and I regret to state, that so far as I have been able to judge, it has not had the slightest influence upon the progress of the disease.

3. Indeed, ever since Vaccination was first introduced here in 1863/4, it has been attended by so many unfortunate circumstances in the shape of secondary eruptions following the operation, and inefficiency of the lymph supplied, that it would be difficult to say, with any degree of certainty, whether it has ever done any good or not.

4. During the past year, the Epidemic broke out with fresh virulence, but from all I can ascertain, the visitation was not the result of fresh invasion but simply a continuation of the epidemic of the previous year.

5. The first deaths resulted from it in April 1868 when 3 casualties occurred, and ever since the disease appears to have been gradually but steadily diffusing itself all over the town.

6. In December the number of casualties increased to 8, the moment people commenced to attend night poays, which can only be attributed to the effects of cold and intercommunication.

7. Vaccination has been pushed on since with renewed vigor, not only with the lymph which I preserved during the rains, but also with some fresh lymph received from Rangoon

in December last, but with I am sorry to say, rather discouraging results, for though the virus appears to take effect in every instance when properly applied, it is invariably succeeded by a crop of unhealthy pustules either upon the arm operated on or on other parts of the body, and in its course does not appear to go through the ordinary stages of vaccinia; and moreover, I am informed, that several cases who have been vaccinated have caught the small pox almost immediately after, and in one case, the disease proved fatal after successful vaccination, but in two cases I have seen, I am bound to say, I considered the disease considerably modified by the operation.

8. From the foregoing the questions naturally suggest themselves—Is there any use in vaccination as practised with the kind of lymph procurable, and if so to what extent? For my own part I should hesitate to give a decided opinion, because I feel convinced, that vaccinators often take it for granted that a case has been successful if suppuration has followed the operation, but apart from this no one can say that lymph which originates secondary eruptions can be healthy or at all suitable for vaccination, and I am of opinion that such matter should not be used, though at the same time I cannot say, whether it possesses any protective influence or not, but one thing is certain, that the lymph procurable differs from that of temperate climates, but by what means this change is brought about, I am unable to state.

9. That Vaccination will hold its ground among the people I have not the slightest doubt, but the sooner an efficient officer who would devote his entire attention to the subject, is appointed, the better both for the protection of the public and the credit of Vaccination.

10. I am unable to state at present,—without referring to the Registrar's returns,—what has been the entire mortality from Small Pox up to this date (19th February 1869), but it is clear that the disease became greatly aggravated at the commencement of the cold weather, and has been more virulent ever since than it was during the rains and in the hot season, and notwithstanding the efforts of the Deputy Commissioner and myself in advising the people as to precautionary measures, the disease has gone on unheeded and is now more prevalent than ever, in every quarter of the town.

11. Finally, I have only to suggest that the number of *Vac-*

*cinators* be increased under European superintendence only, and that *all cases* followed by sores or eruptions be entered as unsuccessful and that the greatest care should be taken in explaining this to the people.

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From A. J. Cowie Esq., Sanitary Commissioner for British Burma, to Horace Spearman Esq., Assistant Secretary to the Chief Commissioner, No. 100, Dated, Camp Prome, 26th February 1869.

Subject.

Further Report on Small Pox at Prome.

I have the honor to report the arrival to-day of the two Native Doctors with several vaccine crusts and four tubes of fresh lymph. Three of the latter were not sealed at one end, the contents were dry, and consisted of purulent matter and were consequently perfectly unfit for use. I have thrown them away. The remaining tube has evidently been received in Rangoon viâ Calcutta and appears to contain good virus.

2. I purpose this afternoon to vaccinate one healthy child from each of the several quarters in Prome, in the presence of the Native Doctors, with a view to teach them how to perform the operation properly, when it will be their duty, to examine the patients daily, reporting to me the results. In the meantime should the lymph prove effectual, additional healthy children will be collected in each quarter, to be operated upon from the successful arms.

3. I do not anticipate any serious opposition from the people, on the contrary, I believe that personal inspection and an interest in the work alone will overcome any doubts they may entertain regarding the practice.

4. As regards Small Pox in the town, the disease is most severe at present in the Kya-thay quarter, but there the fewest deaths have occurred. Those attacked in the town are chiefly children under five years of age, and who have not been inoculated. If therefore the vaccine lymph which you have forwarded turns out to be good we may hope to offer a decided check to the disease.

5. The people say that they are quite willing to remove all affected persons to a special Small Pox Hospital, should one be erected. I fear recommending this step, because most of the attacked are children, and it would be impossible to

say where such a building would end, inasmuch as, room would have to be provided for the mothers and other attendants, thus the object of isolation would be lost by the latter mixing with the general population: Moreover, we have not the means at hand in the shape of establishment, to conduct such an Institution and there are no medicines available.

6. There are few or no medicines in the Dispensary.

7. Should you however think it advisable to erect a Small Pox Hospital, I beg to request that you will telegraph the necessary instructions to the Deputy Commissioner.

8. The Burmese have placed barriers consisting of logs of wood across the streets in which Small Pox is most rife, to warn the healthy of its presence.

9. Those attacked by the disease are not permitted to quit their houses until after the twenty-eighth day of the disease.

10. The Prome fair has not come off this season. The people themselves considered it better that it should not take place, as the season was evidently a sickly one and they did not wish to carry Small Pox back to their villages.

11. The Deputy Commissioner is doing his utmost to induce the people to keep their houses clean and to burn up all rubbish.

12. I think from what I have seen of the disease since my arrival in Prome, that it is on the decrease.

13. I have visited Tsinday, Padoung, Nga-zen-quin near Thombo, Kay-thay, Shwé-doung and numerous other villages on the roads between those places, and I am delighted to be able to report the total absence of Small Pox in all, and that the public health is generally good.

14. I have visited the Hospital daily while here, and performed the Civil Surgeon's duties.

15. The results of vaccination shall be forwarded to you regularly during my stay in this District.

*N. B.*—I forgot to mention that the Native Doctors arrived without Lancets or other necessary instruments.

From A. J. COWIE Esq., Sanitary Commissioner for British Burma, to HORACE SPEARMAN Esq., Assistant Secretary to the Chief Commissioner, No. 107, Dated, Camp Prome, 19th March 1869.

SUBJECT.

Further Report on Small Pox and Vaccination at Prome.

I have the honor in continuation of my letter No. 100, of 26th February 1869, to report that Small Pox is still very prevalent in the town and suburbs of Prome, but particularly in the latter.

2. One tube of the lymph you forwarded to the Deputy Commissioner has turned out to be good, as I expected it would, and under my own care, true vaccination has been started, notwithstanding that the weather is most oppressively hot.

3. Mr. Apothecary Godbier arrived per steamer "Colonel Phayre," on the 17th instant. He has brought with him some tubes of fresh Calcutta lymph, and I have also received a supply of good virus from Dr. Thomson of Her M.'s 76th Regiment, stationed at Thayetmyo.

4. I have handed over the vaccine practice to Mr. Godbier, and with the assistance which Major Browne, the Deputy Commissioner, intends to afford him, I have no doubt, the disease can be continued successfully during the time Small Pox remains epidemic.

5. My object from the first has been not to operate on numbers, but by selecting a few healthy and young children, at a time, to establish real and certain vaccination. This has been done. The disease has taken well, and with care, if the same principles of selection are followed the people will soon learn to appreciate its decidedly superior prophylactic properties to inoculation.

6. The Assistant Vaccinator at this station is a common coolie, and not at all the sort of person to gain the confidence of his fellow-countrymen. On examining his glasses and lancet, I found all in the most filthy state. He had no lymph. His glasses were covered with filthy purulent matter.

7. No wonder then, that those unfortunates operated upon, some suffered from secondary sores, some were attacked by Small Pox, (two children are said to have died of confluent Small Pox), the supposed successful vaccination itself remaining a nasty looking ulcer, slow in healing—and some

were covered with boils and other horrible swellings, the result no doubt of the engrafting of a serious blood poison.

8. One gentleman here, but he appears to have been operated upon from actual *matter*—pus, sent in a tube from Rangoon, is now losing his finger nails after impure vaccination, and I believe his case is entered in the return as successful!

9. The people have certainly a great dread of the practice, and very generally decline to have themselves or their children operated upon, and I don't wonder at it. I think that they are more than justified in refusing to be touched, after what they have seen of vaccination in Prome.

10. No doubt immense harm has been done to the cause of vaccination, and it will take a long time, and require great care and supervision in the management of the practice to restore it to the position in which I left it in 1862, when all classes not only believed in it, but were eager to receive its benefits.

11. I stopped all this dreadful state of things, and destroyed all the filth supposed to be vaccine lymph. Moreover, I prohibited the Assistant Vaccinator to operate.

12. The Small Pox has changed its type from the confluent to a milder form, and the daily number of deaths is decreasing ;—only one death occurred yesterday.

13. I trust with the good vaccination now started and increased sanitation, a check will be placed upon the further spread of the disease, and that when once rain falls the town will be free.

14. I have no doubt in my own mind that the measures adopted have very considerably assisted in bringing about this happy change for the better. I cannot however stay the spread of Small Pox single handed and in the present state of the law. Still much has been done and can yet be done to mitigate its severity. The people are not loath to listen to reason, and so far no obstacles have been, or are likely to be placed in the way of needed improvements. I find all classes equally as anxious as we are to rid themselves of the presence of this most loathsome pestilence.

From A. J. Cowie Esq., Sanitary Commissioner for British Burma, to Horace Spearman Esq., Assistant Secretary to the Chief Commissioner, No. 2, Dated Rangoon, 3rd May 1869.

SUBJECT

Dr. Cowie's letter to Chief Commissioner on subject of filthy lymph which was forwarded to Prome in reply to a statement made by Mr. Summerhayes, Offg. Civil Surgeon of Rangoon, &c.

I have the honor to acknowledge the receipt of your letter No $\frac{274\text{-}4}{270}$, "Home Department," dated Rangoon, 1st May 1869, forwarding letter No. 259 of the 1st April, in original, from Mr. Summerhayes, the Officiating Civil Surgeon of Rangoon, "regarding a supply of bad lymph," and requesting the favor of my opinion.

2. Mr. Summerhayes' letter consists of two parts. The first questions the accuracy of a statement made by me in my letter No. 100 to your address, an extract of which had been forwarded to him; and, the second is taken up in relating his suggestions on the subject of how to provide a continuous supply of good vaccine lymph for British Burma.

3. When I am obliged to record a disagreeable truth, I invariably in the first instance obtain ample evidence to support what I have to say, before placing pen to paper. I am fully aware that the last thing, the Chief Commissioner would desire, is a controversal correspondence between Doctors to be submitted to him; but in the present instance, Mr. Summerhayes' efforts to shield his own Department from blame for forwarding bad vaccine lymph to Prome, by impugning, very unguardedly in my opinion, my statement, makes it imperative that I should in examining the value of his remarks, maintain my own position.

4. The extract of my letter referred to runs thus:—"I have "the honor to report the arrival to-day of the two Native "Doctors with several vaccine crusts and four tubes of fresh "lymph. Three of the latter were not sealed at one end, the "contents were dry and consisted of purulent matter and were "consequently perfectly unfit for use. I have thrown them "away. The remaining tube has evidently been received in "Rangoon viâ Calcutta and appears to contain good virus."

5. Not one word is mentioned in the extract about "broken tubes." I simply stated that three of the tubes 'were not sealed at one end.' All the four tubes arrived at Prome safely. They were properly packed and there

was not the slightest evidence of their having received rough usage in transit. Three of the tubes were short, and one long but of the usual length. The three short ones had been slovenly and very imperfectly filled, with dark yellow brown matter. They were dirty looking and the attempt to seal them had been still more carelessly done. The truth is, these three tubes were one and all blackened at both ends as if they had been thrust into the flame of a common tallow candle, and although their mouths at one end had been closed up, at the other they remained open. The fourth or longest tube—and if any of the four had been broken in transit this one by virtue of its length would certainly have been the first to come to grief,—contained clear and translucent lymph. It was well filled, clean and very neatly sealed by a small clear bead of glass at either end, and evidently had been, when contrasted with the others, manipulated by a practised hand. Mr. Summerhayes assumes that all the four tubes were of one character. What I have now said is amply conclusive to show that, this assumption is as vague and unsatisfactory as that where he presumes the three bad tubes had been "broken in transit."

6. Mr. Summerhayes remarks that no vaccine lymph in tubes was received from Calcutta by his Department during the past season, "and consequently the Sanitary "Commissioner's statement, 'the remaining tube had evi-"dently been received in Rangoon viâ Calcutta' is not "found upon examination to be supported by fact."

7. During the time I held the Civil Surgeoncy of Rangoon (for five years) with very few exceptions, our supplies of vaccine lymph in tubes were received from Bengal. The Superintendent General of Vaccination at Simla usually supplied us. Recognizing the fourth tube then as one similar in every respect to those I had been in the habit of receiving from India, I very naturally concluded that it had reached the Civil Surgeon of Rangoon, in the usual manner, viz., viâ Calcutta. I have no hesitation in saying that any person of ordinary intellectual capacity knowing this, as the Officiating Civil Surgeon of Rangoon might have known it had he chosen to enquire, on reading my letter, must arrive at this conclusion. I will go further and say that, no other interpretation can be put upon it.

8. Mr. Summerhayes continues, "the four tubes in ques-"tion, had been either filled by the Superintendent of Vaccina-"tion here or by Dr. Shortt of Madras." This is an assertion, and as Mr. Summerhayes never saw the tubes himself let me examine it carefully. I have already shewn that the four tubes sent to Prome could not have been filled and treated by one and the same hand. Having had experience of the manner in which an Assistant Vaccinator, and even the Superintendent of Vaccination of Rangoon himself fills capillary tubes, and having also seen Madras filled tubes,—which permit to add, resemble in every important particular those furnished from Bengal (and I never yet received a tube from either Presidency blackened and unsealed)—I am quite able to form a pretty correct opinion as to "which is which." My humble opinion remains unshaken. I still continue to believe that, the three bad tubes forwarded to Prome were an exhibition of an unsuccessful attempt to fill them in Rangoon, and the fourth, which I reported at the time appeared to contain good virus and which subsequently verified my expectations, came from one of the Presidencies. I will not split hairs by particularizing the Presidency, but suffice it to say its *habitat* was not Rangoon.

9. Now let us see how far Mr. Summerhayes supports me in this opinion. He says: "I pause here to remark that the custom which obtains here of mixing lymph containing tubes received (of course he means tubes containing lymph) from the Presidencies with tubes filled here appears to me reprehensible as it prevents all comparison of the relative goodness of the lymph procured from different sources." This is sufficient. I think the Chief Commissioner will have no difficulty now in deciding how Prome came to be supplied with a Presidency tube. I venture to think that it is a pity Mr. Summerhayes did not pause a little sooner. His letter in my opinion would perhaps have been more valuable had it commenced at this point. This passage simply refutes all that has gone before it and really acknowledges the exactness of my statement.

10. That Mr. Summerhayes would like to have received back the unsealed tubes is quite natural. I have had considerable experience in vaccination, and I do not acknowledge a superior opinion to my own on this subject in British Burma, either as to the quality of lymph, the best mode of

operating, capillary tube filling and sealing, and true vaccination. Especially do I feel a confident superiority in this respect when I remember that, a large number of the Medical men practising vaccination among the native population have not only never performed the operation, but in the majority of instances have never studied the practice at Home. It is fortunate therefore that the tubes of bad lymph were thrown away instead of being returned to Rangoon, as they might have been, had they been so returned, mixed up with good Presidency lymph in the reprehensible manner Mr. Summerhayes has stated to be the practice in his Hospital.

11. This disposes of the first portion of Mr. Summerhayes letter.

12. The remainder of Mr. Summerhayes' letter is a record of his suggestions and opinions for "ensuring the unbroken "continuance of copious supplies of vaccine lymph at Rangoon," for the use of British Burma generally, and the mode of collection &c.

13. As I understand the establishment of a special Vaccine Department in British Burma, under a Superintendent General—a Medical gentleman practically acquainted with the subject—is contemplated by the Government, I think it would be better to let the consideration of these vital questions stand over for the present.

14. Save in the Arakan Division, during the past year I have visited every vaccine station in this country, and I grieve to be obliged to record that, the practice as latterly conducted in some of the principal towns, either from carelessness, ignorance, or want of superyision has brought this great prophylactic into disrepute among the people, and led me to utterly disbelieve in the usefulness of Dispensary vaccination. The vast mischief which has been done in Prome for instance may be said to be almost irreparable.

15. The working of the Vaccine Department as at present constituted in British Burma is not I am most happy to say under me. The Chief Commissioner must therefore look for an explanation of these unfortunate results in another quarter.* I only in conclusion desire to offer one suggestion for his consideration, which is this, that until a Superintendent General of

* Deputy Inspector General of Hospitals, Pegu Division.

Vaccination with an efficient working staff shall have been appointed, no Civil Surgeon or Medical Officer in charge of a Civil Station should be permitted to operate save with lymph received direct from the Presidencies, or with that which has been personally collected. I am of opinion that Native Doctors and Assistant Vaccinators should be prohibited from vaccinating unless immediately, that is, personally superintended by a Civil Surgeon or other qualified Medical gentleman.

16. Mr. Summerhayes letter is herewith returned as requested.

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From HORACE SPEARMAN, Esq., Assistant Secretary to the Chief Commissioner, to the Commissioner of Arakan, No. 275-25, Home Department, Dated Rangoon, 5th July 1869.

In enclosing a copy of a telegram to your address in reply to yours of the 3rd Instant, regarding Cholera in Akyab, I am directed to inform you that at the request of Dr. Cowie, 10 casks of McDougall's disinfecting powder will be shipped for Akyab on board the mail steamer. Dr. Cowie will give full instructions as to the means of disposing of this. I am to request that, should any more be required, you will indent on Bengal for it by telegram.

SUBJECT.

Sanction for the Expenditure of 5,000 Rupees in Sanitation in Akyab.

2. As you are aware a sum of Rupees 5,000 has been sanctioned in the Local Funds Budget to be expended in Akyab town, the Chief Commissioner considers that it should be spent in carrying out any sanitary measures which Dr. Cowie may recommend, and the cost of the disinfecting powder used in Akyab town must be defrayed from it. The Chief Commissioner trusts that no more funds will be required for the town and I am desired to impress upon you that whilst every endeavour must be made to remedy its present detective sanitary state, the greatest economy and care must be used in spending the money. You have already been informed that estimates should be prepared and sanctioned before the money is expended. It is not intended that there should be detailed estimates nor that they should be sanctioned by the Chief Commissioner. You yourself have authority to sanction expenditure not exceeding Rs. 250 on any one work. The object of insisting upon the preparation of esti-

mates is that the sanctioning Officers may regulate the expenditure by the Grant, and may see that money is not being carelessly or uselessly spent. The Chief Commissioner cannot think that the preparation of such estimates as are necessary for submission to you before you sanction a work, need take more than 5 or 10 minutes to prepare each, if the Officer who prepares them, the Magistrate, makes himself thoroughly acquainted with what he intends to do in each case, and the rates he will have to pay. I am to impress upon you that the necessity for the preparation of estimates can never be accepted as an excuse for the money unused, as it is the duty of Officers to prepare the estimates, a work of little or no difficulty to an intelligent Officer. Any expenditure through the D. P. W., must be from Funds provided in their Budget and not from the Rupees 5,000 which is for Civil Officers.

3. I am also to inform you that should unfortunately the amount granted Rupees 5,000 not be sufficient, a formal application for a fresh grant, with the reasons why Rs. 5,000 is not enough, and the grounds on which you have fixed the amount of the new grant must be submitted before the grant of Rs. 5,000 is expended, and before any portion of the new grant applied for is spent. It is impossible for the Chief Commissioner to grant lump sums fixed without any consideration or thought, for Officers to use or not as they think right: such a course with the most careful Officers could only tend to reckless expenditure, and even in a case of life and death such as the present, such a course could not be defended.

4. I am to request that you will cause a separate account to be kept of the expenditure under all heads rendered necessary by these unfortunate outbreaks of Cholera. This will form a valuable addition to the full Report which I am to request that you will submit and will show exactly what expense was entailed.

5. No Subordinate Medical Officers can be spared from Rangoon, but should Dr. Cowie and yourself, after consultation consider that the services of any are necessary I am to request that you will telegraph to the Inspector General of Hospitals, Lower Provinces, who will be communicated with by this mail.

6. The Chief Commissioner, as you have been informed by

telegraph desires to receive a report as to the extent to which Dr. Cowie's instructions given during his last visit have been carried out, with a full explanation of why any have remained practical attention being paid to them if any have.

7. As regards the Akyab District, I am to request that, after consultation with Dr. Cowie, you will report by telegram, the amount of funds necessary to carry out any remedial measures which Dr. Cowie may advise, and which cannot be delayed: and the Chief Commissioner will endeavour to place the necessary funds at your disposal from the Local Funds of the District. In making this estimate great care should be exercised, and no more asked for than is really necessary, for as there will be no time to obtain from you a formal report, or to refer any point for more information, the Chief Commissioner will be prepared to grant the amount you ask for, if it is possible.

8. In conclusion in impressing upon you the absolute necessity for economy, I am to state that in a case of such urgency as the present, where the lives of many are at stake, the Chief Commissioner would be sorry to think that any absolutely necessary expenditure, had not been incurred, and he places full confidence in you, assured as he is that you will spare no endeavours to carry out whatever measures are necessary, with as small an expenditure as possible.

*P. S.* Only one cask of McDougall's disinfecting powder is procurable in Rangoon.

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From A. J. Cowie, Esqr, Sanitary Commissioner for British Burma, to Captain Malcolm Furlong, Assistant Secretary to the Chief Commissioner No. 103, Dated Sittoung, 21st September 1869.

SUBJECT.

Requests that a proper and cheap disinfectant may be kept in all towns.

I think it very important that some proper and cheap disinfectant, which will not materially deteriorate by keeping, should be always available in all the large towns of this Province.

2. Sulphurous acid and the smoke of burning wood, and other simple and useful disinfectants are always at hand, but they are inconvenient sometimes and cannot be used in a sick room: Moreover, for general purposes about a town they are inapplicable. Again, the present law relating to the sale

of Sulphur might interfere with its ready accessibility when immediately required during an Epidemic, and there is a probability that if widely distributed, it would be in some instances put to an improper use by this powder making—loving people. Sulphur altho' of a high order as a disinfectant, must therefore be looked upon rather as an adjunct, than a harmless, cheap and universal substance to the object in view.

3. McDougall's powder answers in every respect the cardinal points I have mentioned, and I have the honor now to request that, this valuable and cheap disinfectant may be always kept in store in sufficient quantity, in all municipal towns at municipal expense.

4. As to the quantity necessary for each town, the Civil Surgeons and Medical Officers in charge of Civil Stations should be consulted on this point. They also will suggest its mode of use.

5. I find that throughout the country generally the use of McDougall's powder is not thoroughly understood, I beg to enclose therefore a copy of the inventor's directions, which I desire may be printed and circulated for the information of all Civil Medical and Magisterial Officers.

*Direction for the use of McDougall's Disinfecting Powder.*

"Whenever the cause of offensive smell can be reached it will be sufficient to let the powder be freely sprinkled over it. When the dry powder cannot be directly applied to the source of impurity, as in sinks, sewers, &c., it may be mixed with water at the rate of an ounce to the quart, and the solution poured in, the quantity used being proportionate to the size of the drain.

Rules for the use of McDougall's Disinfecting Powder.

In sick rooms a solution of the powder should be placed in the chamber utensils, and the powder freely distributed in different parts of the room, as much surface being exposed as possible. The foul linen should be instantly deposited in water, containing a strong solution of the powder.

Where rooms require fumigation, as in cases of fever, &c., mix the powder with water in an open vessel, and add a little

sulphuric acid. A powerful fumigating gas will instantly be liberated, which will effectually destroy all miasma and infectious emanations.

To correct the putridity of water, mix with it a quantity of powder, in the proportion of a quarter of an ounce to a gallon.

To destroy putrid emanations in damp cellars or other closely confined place, the powder may be mixed with water, and applied as a white-wash to the walls and ceiling.

To remove the smell in newly painted rooms scatter the powder freely over the floors, or fumigate them as above directed.

In stables, cow-houses or other out buildings, it must be freely scattered about the floors, and over the surfaces of all substances likely to give out offensive smell.

Beetles or cockroaches may be driven away by sprinkling freely in and about the holes and crevices from which they come.

Its free use in coffins, or on the bodies of the dead, prevents all offensive smell, and removes all danger from infection; a little of the powder between the folds of flannel placed over the mouth and nostrils of the corpse is a convenient method of using it."

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From Captain MALCOLM FURLONG, Officiating Assistant Secretary to the Chief Commissioner, to A. J. COWIE, Esqr., Sanitary Commissioner for British Burma, No. 749-2, Home Department, Dated Rangoon 27th Novr. 1869.

SUBJECT.

Chief Commissioner's sanction for McDougall's disinfecting Powder being indented for by Medical Officers when necessary.

With reference to the third para. of your letter No. 128 of the 23rd instant, I am directed to inform you that the Chief Commissioner has issued instructions permitting Officers in Medical charge of Stations to indent for McDougall's disinfecting powder whenever they may consider its use to be actually necessary, and provided the Municipal funds of the town can afford the requisite expenditure.

## MEMORANDUM.

SANITARY COMMISSIONER'S OFFICE.

To

ALL DISTRICT, MAGISTERIAL AND CIVIL MEDICAL OFFICERS.

*Dated Rangoon, 8th December* 1869.

The undersigned has the honor to forward copy of letter No. 749/2, "Home Department," dated the 27th ult, from the Officiating Assistant Secretary to the Chief Commissioner, to his address, on the subject of providing McDougall's disinfecting powder, for the use of towns, with the request that where provision has not already been made to meet the expense of a proper supply, the same may be estimated for and the amount entered in the next Budget.

SUBJECT.
Sanitary Commissioner's Circular.

2. The quantity of powder which should be indented for, ought to be calculated at the rate of one cwt. for every two thousand of inhabitants. In situations where Epidemics or serious disease are of periodic occurrence, an adequate margin should be left, in anticipation, to meet the required outlay or any additional supplies which may become necessary. This point must be determined by Civil Medical officers, where such are stationed, and Magisterial Officers unaided by professional advice must use their own discretion.

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From A. J. COWIE, Esqr., Sanitary Commissioner for British Burma, to Captain MALCOLM FURLONG, Assistant Secretary to the Chief Commissioner, No. 127, Dated Rangoon 25th November 1869.

SUBJECT.
Elephant Sheds at Toungoo.

I have the honor to forward for information, a copy of a letter No. 274, from Capt. Hughes, Deputy Commissioner, to the Officer Commanding at Toungoo, on the subject of the unhealthy condition of the Elephant lines at that station.

2. In my last year's Inspection Report on the station of Toungoo, and letter on the subject of the present unsuitable position of the sheds referred to, now being published together with my Annual Sanitary Report for 1868, you will see that I fully pointed out the steps I then thought necessary should be taken to improve matters. During my late tour I drew

Captain Hughes' attention to the delay, and apparent want of interest displayed by his predecessor, in attending to my recommendations, and he at once set to work to remedy the evils I complained of as evinced by his present letter.

3. The Elephant and Cattle sheds are situated in the town of Toungoo, on the south bund, and the drainage is conducted into the moat which surrounds the town, finding an outlet into the river at the N. E. extremity of the station. The filthy waters of this ditch therefore, pass through the Civil and part of the Native quarters, creating in their passage the most fulsome stench. Undoubtedly the unhealthiness of these positions in a great measure must be due to this cause.

4. To prevent the filth from these sheds entering the ditch is an easy matter, and one which can be undertaken without incurring any very great expense. The following is a rough sketch of the locality shewing what I propose to meet the present difficulty.

5. To remove the sheds would cost Government a large sum of money, which is out of the question at the present time. I would therefore suggest that, a bund be thrown across the ditch in the situation indicated by the three lines in the sketch, thus ═══. In this manner all drainage from the west and from the sheds would be diverted into the swamp and cultivated ground to the south of the station, and from thence into the nullah which is situated still further south, but at no great distance. The culvert on the south road and the road itself would probably require some slight alterations but beyond this I anticipate no expense whatever. By and bye the Elephant and Cattle sheds, when we have money for the purpose, can be removed altogether—they are certainly in a most objectionable position.

6. In regard to the outbreak of Small Pox at this station, I desire to state that, through the kindness of Lieut. Tomkins, R. E., I have received a supply of fresh Vaccine lymph (part of some which he obtained direct from England) which I shall send to Captain Hughes at once. The Superintendent of Vaccination should have supplied all stations with the virus long since.

From A. J. Cowie, Esq., Sanitary Commissioner for British Burma, to Captain Malcolm Furlong, Assistant Secretary to the Chief Commissioner, No. I, Dated Camp Nyoung-Doon the 21st December 1869.

SUBJECT.
Cholera at Nyoung-Doon

Mr. Duke, Assistant Commissioner, having reported an outbreak of Cholera at Nyoung-Doon, I immediately proceeded to the spot to render assistance. On arrival I at once visited all the sick, and administered medicine, which I brought with me, with my own hand.

2. I now called all the "Loogyees" or elders of the people together, and explained to them how to place their town in the best possible sanitary condition, and desired them to exert their influence among the people and persuade all to carry out my instructions with a view to stay the further spread of the disease. To this end I drew up the following notice (in Burmese) for circulation throughout the town.

NOTICE TO THE PEOPLE OF YANDOON.

"The Sanitary Commissioner has arrived. He wishes to explain to the people the best means of protecting themselves against the Epidemic of Cholera which is now prevalent. It must be understood that Cholera is supposed to spread through several channels—the worst of all known sources for spreading the disease being the excreta of the sick, soiled clothes and utensils, and impure water.

"Therefore, it is absolutely necessary that all should ensure strict cleanliness about their persons and houses, and see that their drinking water is of the very best quality. All should abstain from eating diseased meat, unripe fruits, or vegetables, or any article of food known to be difficult of digestion.

"To this end the Sanitary Commissioner would suggest the following:

"Houses must be kept as clean as possible.

"All refuse, rubbish and dirt underneath them, should be cleared out, carried a long way off or burnt.

"The ashes of the cooking places, broken charcoal, or the ashes of burnt wood and fresh dry earth should be strewn underneath the houses.

"This should be done daily if possible. All privies should be covered daily in like manner.

"All discharges (either vomiting or purging) from any one suffering from the disease, should be covered at once, with the same materials.

"Lime, mixed with dry earth is a very good disinfectant.

Be careful not to overcrowd your houses with too many people.

WATER:—"The most important point to observe is good wholesome water.

"And to ensure this, the water whether taken from river or well, should be first boiled, and then passed through sand and charcoal as in the ordinary country filter.

"Be very careful to see that all articles used during the illness of any one suffering from Cholera are thoroughly cleaned before being again used by another person, such as cups, basons, spoons, glasses and such like household utensils.

"All clothes used during the sickness of an infected person must be burnt.

IN CASE OF A DEATH FROM CHOLERA.

"The body must be buried at once; the grave to be dug at least four feet in depth; lime should be placed over the coffin or body, before the earth is covered in. No body under any circumstances whatever should be thrown into the river or creeks.

"Every room in a house in which a case of Cholera has taken place, or a death has occurred from the disease, should be vacated for at least ten days, and should be smoked with green wood fires: to which should be added each time a fire is made, half a curry spoonful of sulphur powder.

"The Assistant Commissioner has received medicines from Rangoon for the use of the town. All persons are invited to apply early at his house, on the first appearance of Diarrhœa, when he will at once give them what is necessary."

3. All listened with great attention and have since evinced a very laudable spirit in their endeavours to act up to my views, which they admit are reasonable and simple enough.

4. I need not tell you that the steps which I have taken have been followed by the most marked benefits. Cholera has certainly received a decided check. Only one fresh case

having been reported yesterday and no further deaths recorded to-day.

5. The abatement of the disease has given me time to investigate all the circumstances which attended the appearance of the first case, and I have now the honor to report that Cholera was imported into this town in the following manner. A Burman from Mandalay suffering from the disease, arrived in a boat which anchored directly opposite the Inspector's (Police) house, on the night of the 10th Instant. Here he vomited and passed his motions into the stream. A native of India residing in the Inspector's compound proceeded to bathe close to the boat. The following day he was attacked with Cholera and from him it was spread to the quarter in which he lived.

6. The total number of deaths from the disease registered up to the present time is :—

| | | | |
|---|---|---|---|
| 10th | December. | No. | 1 |
| 13th | do. | „ | 1 |
| 14th | do. | „ | 2 |
| 16th | do. | „ | 3 |
| 17th | do. | „ | 2 |
| 18th | do. | „ | 3 |
| 19th | do. | „ | 4 |
| 20th | do. | „ | 3 |
| 21st | do. | „ | 0 |
| | | Total | 19 |

7. In conclusion I would not be doing my duty were I to omit to bring to the notice of the Chief Commissioner, the comparative very cleanly and satisfactory state in which I found the town of Nyoung-Doon on my arrival; I say comparative because, owing to the low-lying position of the town, built in its greater extent on the much frequented river bank and the nature of the soil (river deposit), it is a most difficult matter to keep it wholesome or even neat in appearance. To Mr. Duke, the Assistant Commissioner, therefore, great credit is due for his exertions in this direction, and for the evident attention which he has paid to all my instructions on sanitary matters. He has on this occasion rendered me great assistance, and to the readiness with which he has seconded my endeavors to stamp out the Epidemic, much of the success which has thus far resulted, is to be attributed.

From A. J. Cowie, Esq., Sanitary Commissioner for British Burma, to Captain Malcolm Furlong, Assistant Secretary to the Chief Commissioner; No. 167, Dated Rangoon 5th January 1870.

SUBJECT.

Further report on Cholera at Nyoungdoon and in the Tharrawaddy and Rangoon Divisions.

I have the honor to report for the information of the Chief Commissioner that Cholera, which during the month of December 1869, made its appearance in some of the large towns in the Rangoon and Tharrawaddy Divisions of the Province, has died out as far as I can ascertain.

2. The disease most fortunately, altho' wide spread has not been very fatal. In Myanoung, Henzadah, Zaloon, and Nyoung-doon where it shewed a tendency to propagate itself in an Epidemic form, judicious sanitary precautions instituted on the spot by the responsible officers checked the disease.

3. The particulars of the outbreak at Myanoung, I hope to be able to submit to you shortly. At present the papers are incomplete.

4. The mortality from Cholera reported from the other towns is as follows:—

| | |
|---|---|
| Henzadah | 4 |
| Zaloon | 5 |
| Donabhew | 1 |
| Nyoung-doon | 15 |
| Thanjoung | 15 |

5. I left Nyoung-doon on the 3rd instant. Cholera had entirely ceased, no death having occurred since the 25th December 1869.

6. I visited Cuttiah, Twantay, Kyiek-Taw, Day-deay and numerous villages, but found all healthy and free from the disease. The people of Twantay informed me that Cholera has never been known to visit the town, which is built on a laterite soil, and this probably accounts for the fact,—similar soils elsewhere generally enjoying the same immunity.

7. Henzadah was very clean and I was agreeably surprised to find that my recommendations for improved drainage are receiving due attention. Nyoung-doon also was much improved in cleanliness. Zaloon however was very dirty, and the bazaar (private property), a new and suitable building was in its internal management filthy. Twantay would be all the better if more attention were paid to conservancy. Kyiek-Taw use to be inundated by the river.

This has been prevented by the construction of a good bund about half a mile in extent; the surface being metalled with brick. I mention this subject as this work has been undertaken and completed by the people themselves and I believe entirely at their own expense, that is, without assistance from the Government or from any District, Local or Municipal fund. Kyeik-Taw is a large place containing some two thousand inhabitants. It was tolerably clean for a native town. Cholera had not visited it, and the Public health appeared good; yet I think that greater attention to cleanliness and conservancy generally might be practised with benefit.

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# NOTE ON THE CHOLERA MAP.

# NOTE ON THE CHOLERA MAP

Cholera Epidemic at Mandalay from middle of 1868 to expiration of 1869.

1. Cholera was Epidemic in Burma Proper from the hot season of 1868 to the end of 1869. Mandalay the Capital especially suffered.

British Burma visited by two distinct outbreaks of Cholera in 1869. Their lines of travel indicated.

2. British Burma was visited by two distinct outbreaks of Cholera in 1869. The first commenced in the month of August 1868 at Toungoo and extended throughout the country, ceasing in Arakan in October to the westward and in Mergui in September to the south-eastward in the year following. The second appeared in the month of December at Prome, and although exceedingly mild, the disease followed a distinct course.

The direction of both outbreaks, the villages and towns attacked noted in the map by red and blue lines and dots respectively.

3. The directions of the two visitations are represented in the map by red and blue lines respectively; the towns and villages attacked on both occasions are noted by dots and "Circles" in corresponding colors (vide the reference on the map).

Villages in Kareen hills not given.

4. The names of the Kareen villages in the hills east of Toungoo are not entered. They are not now known; in fact, the villages no longer exist. The wild tribes in these mountains live in rudely constructed huts, which they immediately abandon and burn down on the appearance of Cholera among them, and then seek new sites.

The course of the Cholera through Tavoy district not recorded by the District and Medical officers

5. To the east the link is lost again between the districts of Amherst and Mergui. Five deaths from Cholera occurred during the year at Tavoy, but no information on the subject, or Cholera map has reached this office.

6. Colonel Ryan, the Deputy Commissioner of Maulmain, has very kindly sent me a well executed map, furnishing

Colonel Ryan's map furnishes every particular of the disease in his district. Captain Spearman, late Offg. Deputy Commissioner of Mergui also furnishes valuable information.

all particulars of the disease in his district. He writes, it is "very clear that the Cholera followed the track of the rivers down the Salween and up the Gyne until it was joined by the Houndraw creek or river. It appeared as you will perceive on both sides of these rivers and did not extend to any great distance inland." Here the disease reached the hills again and all trace of it was lost. Captain Spearman, who has just returned from Mergui where he has officiated as Deputy Commissioner, on making enquiries about the Cholera, learnt that it had come down from the hills following the course of the Tenasserim river: but whether introduced by the regular jungle route viâ Tavoy as well, cannot now be ascertained. The dates of progress however, in other situations point distinctly to the disease having travelled south.

Sanitary Commissioner believes that Cholera entered Arakan from Burma proper viâ the hill passes. Dr. Mountjoy, Civil Surgeon of Akyab thinks that it was introduced by Chittagong coolies.

7. I believe that Cholera entered Arakan viâ the hill passes from Burma Proper, constant communication taking place between the two countries. Dr. Mountjoy, the Civil Surgeon of Akyab thinks otherwise. He says that the disease was introduced by Chittagong coolies, travelling down the roads and viâ the Myoo river to the Akyab labour markets. The only information I am able to furnish of the disease in this direction is, that contained in the subjoined table forwarded to me by the Commissioner of Arakan. The Akyab district is divided into eight townships and these again are sub-divided into circles, but the number of villages attacked by Cholera in each circle is not given. The dates of outbreak and cessation of the disease throughout the eight townships are all entered alike, viz., "from middle of January to close of October 1869," which is simply absurd. The fact is Cholera stole into Arakan like "a thief in the night," and was not recognized as a serious outbreak until it had appeared in an Epidemic form in the town of Akyab itself. Thus all opportunities of discovering first cases were lost. I was not even communicated with until the 18th of March, when the Magistrate wrote me as follows:—(letter No 114, dated Akyab, 13th March 1869)—"I have the honor to report to you that Cholera has shewn itself in the town of Akyab. It appeared about the end of January and the total number of deaths from this disease in the town of Akyab at present numbers 90."

*Statement shewing the number of persons that died of Cholera during the year 1869, or from January to October 1869—inclusive.*

| Name of Township. | Name of Circles. | No. of persons attacked by Cholera. | | No. of deaths. | | Percentage of deaths amongst those attacked. | Population. | Percentage of deaths to population. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | Males. | Females. | Males. | Females. | | | | |
| Naaf Town. Composed of 11 Circles. | Guat Kyon ... ... ... ... | 45 | 17 | 23 | 6 | | | | This is the North West Township of the District. From beginning of January to the middle of May 1869, out of 11 Circles Cholera prevailed in 6 and the number of deaths reported was 210. And from middle of May to 17th June 11 died, and from this latter date to the close of October 6 died. |
| | Guat Toung ... ... ... ... | 13 | 5 | 8 | 4 | | | | |
| | Tharai Koonboung ... ... ... | 51 | 40 | 29 | 20 | | | | |
| | Allai Thangyaw ... ... ... | 89 | 108 | 49 | 47 | | | | |
| | Mreu hloot ... ... ... ... | 128 | 91 | 3 | 2 | | | | |
| | Guat Mrouk ... ... ... ... | 4 | 2 | 3 | 2 | | | | |
| | Preu Phyoo ... ... ... ... | 20 | 23 | 11 | 16 | | | | |
| | Mrothie ... ... ... ... ... | 4 | 1 | 3 | 1 | | | | |
| | Total... | 354 | 287 | 129 | 98 | 35·41 | 35·853 | ·63 | |

*Statement shewing the number of persons that died of Cholera during the year 1869, or from January to October 1869—inclusive.*

| Name of Township. | Name of Circles. | No. of persons attacked by Cholera. | | No. of deaths. | | Percentage of deaths amongst those attacked. | Population. | Percentage of deaths to population. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | | | | |
| 2 Rathaidoung. Composed of 21 Circles. | Thai gau ... ... ... ... ... | 144 | 110 | 116 | 97 | | | | This Township is situated East of the Naaf. From January to middle of May 1869, Cholera prevailed in 10 Circles and the No. of deaths reported during the period was 643, and from middle of May to 17th June 1869, 17 died and from this latter date to the close of October 1869, 2,056 died; thus there was a large number died between June and October 1869. |
| | Tha Meehla ... ... ... ... | 1 | 2 | 1 | 2 | | | | |
| | Krui Kyon... ... ... ... ... | 57 | 67 | 44 | 43 | | | | |
| | Ahguoo Maw... ... ... ... | 78 | 62 | 69 | 38 | | | | |
| | Tharet Preng ... ... ... ... | 153 | 120 | 56 | 41 | | | | |
| | Khwai douk Khyoung ... ... | 112 | 89 | 44 | 41 | | | | |
| | Mee Nyo Htoung ... ... ... | 49 | 48 | 37 | 39 | | | | |
| | Kyon Baw ... ... ... ... | 203 | 265 | 117 | 107 | | | | |
| | Kyoung doung ... ... ... ... | 70 | 50 | 41 | 31 | | | | |
| | Tsa Pho Kyon ... ... ... | 4 | 2 | 4 | 2 | | | | |
| | Guway doung ... ... ... ... | 27 | 22 | 16 | 16 | | | | |
| | Tsine doung ... ... ... ... | 24 | 18 | 22 | 14 | | | | |
| | Tha mee hla breng ... ... ... | 8 | 9 | 3 | 8 | | | | |
| | Htee Zway ... ... ... ... | 184 | 126 | 133 | 70 | | | | |
| | Rathaidoung ... ... ... ... | 210 | 195 | 111 | 100 | | | | |
| | Loung Zing ... ... ... ... | 285 | 285 | 267 | 266 | | | | |
| | Moozai gyee ... ... ... ... | 152 | 38 | 98 | 33 | | | | |
| | Min Tsick ... ... ... ... | 162 | 61 | 109 | 45 | | | | |
| | Nyoung bingyee ... ... ... | 103 | 74 | 54 | 47 | | | | |
| | Moozai ... ... ... ... ... | 248 | 147 | 168 | 98 | | | | |
| | Kolla Pengzing ... ... ... | 69 | 47 | 39 | 29 | | | | |
| | Total... | 2343 | 1837 | 1549 | 1167 | 64·97 | 51·265 | 5·20 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 Oonetoung East. Composed of 17 Circles. | Prui Khyoung ... ... ... ... | 121 | 67 | 98 | 52 | | | | Situated south of Myohoung or Old Arakan, and south-west of Mengbra. From January to middle of May 1869, out of 17 circles the epidemic prevailed in 7, and 72 persons died from it; and from the middle of May to 17th June 1869, 7 persons died, and from this latter date to the close of October 1113 died. |
| | Kyen Khwai Maw ... ... | 130 | 138 | 93 | 110 | | | | |
| | Wen Kyon ... ... ... ... | 63 | 75 | 56 | 61 | | | | |
| | Pyah Kyon ... ... ... ... | 85 | 84 | 66 | 73 | | | | |
| | Let pen Brah ... ... ... ... | 46 | 37 | 35 | 29 | | | | |
| | Toung Nyo ... ... ... ... | 50 | 47 | 22 | 29 | | | | |
| | Toung rin ... ... ... ... ... | 95 | 108 | 59 | 65 | | | | |
| | Tha rack ... ... ... ... | 12 | 16 | 6 | 10 | | | | |
| | Kyaw rhyn ... ... ... ... | 30 | 49 | 22 | 48 | | | | |
| | Tha lay ... ... ... ... ... | 58 | 37 | 25 | 18 | | | | |
| | Mee Kyoung dek ... ... ... | 3 | 3 | 2 | 2 | | | | |
| | Pyaizoogyee ... ... ... ... | 7 | 2 | 5 | 2 | | | | |
| | Tsine dook ... ... ... ... | 104 | 56 | 49 | 44 | | | | |
| | Tsine bike ... ... ... ... | 46 | 56 | 21 | 29 | | | | |
| | Tsine dook gyee ... ... ... | 6 | 7 | 4 | 7 | | | | |
| | Boodoung ... ... ... ... | 12 | 9 | 10 | 6 | | | | |
| | Tha loin doung ... ... ... ... | 23 | 29 | 15 | 19 | | | | |
| | Total... | 891 | 820 | 588 | 604 | 69.66 | 22,414 | 5.31 | |

*Statement shewing the number of persons that died of Cholera during the year 1869, or from January to October 1869—inclusive.*

| Name of Township. | Name of Circles. | No. of persons attacked by Cholera. | | No. of deaths. | | Percentage of deaths amongst those attacked. | Population. | Percentage of deaths to population. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | | | | |
| 3 Ooreetoung West. Composed of 19 Circles. | Yotah Roop..... ..... ..... | 95 | 86 | 85 | 67 | | | | It is a Central Township adjoining Rathaidoung and Myohoung. Out of 19 Circles during a period extending from January to middle of May 1869, the epidemic prevailed in 15 Circles in which 539 persons succumbed to it, and from middle of May to 17th June 1869, 12 persons died, and from this latter date to the close of October 1941 persons died. |
| | Tsin Htin..... ..... ..... | 188 | 206 | 108 | 151 | | | | |
| | Oung Tsit..... ..... ..... | 194 | 146 | 54 | 56 | | | | |
| | Ren kyon..... ..... ..... | 91 | 86 | 63 | 41 | | | | |
| | Tha meehla..... ..... ..... | 200 | 177 | 143 | 114 | | | | |
| | Pan tsan way..... ..... ..... | 103 | 89 | 63 | 44 | | | | |
| | Thin boon dan..... ..... ..... | 119 | 106 | 97 | 78 | | | | |
| | Taw gan..... ..... ..... ... | 51 | 78 | 52 | 52 | | | | |
| | Meckalagyah ..... ..... ..... | 112 | 105 | 40 | 37 | | | | |
| | Wah Boa..... ..... ..... | 59 | 55 | 32 | 39 | | | | |
| | Tsa bahla Mrouk..... ..... | 40 | 29 | 27 | 21 | | | | |
| | Do. do Toung..... ..... | 69 | 86 | 44 | 53 | | | | |
| | Amait khin ..... ..... ..... | 150 | 117 | 119 | 95 | | | | |
| | Ooreetoung ..... ..... ..... | 169 | 198 | 95 | 105 | | | | |
| | Yok you ..... ..... ..... | 244 | 154 | 214 | 114 | | | | |
| | Yognoo..... ..... ..... ... | 190 | 140 | 34 | 40 | | | | |
| | Tseen Phyoo kyon..... ..... | 45 | 41 | 36 | 34 | | | | |
| | Thin gaunck..... ..... ..... | 44 | 39 | 24 | 21 | | | | |
| | Total... | 2163 | 1948 | 1330 | 1162 | 60·61 | 34,936 | 7·13 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4 Myo Houng. Composed of 21 Circles. | Shin gyaw ... ... ... | 145 | 119 | 102 | 92 | | | | North-East of Ooreetoung West. Out of 21 Circles Cholera prevailed in 6 during the period extending from January to May 1869, and the number of deaths reported was 177, and from middle of May to 17th June 1869, 8 persons died, and from this latter date to the close of October 1268 persons died. |
| | Kolla Boon ... ... ... | 182 | 203 | 131 | 145 | | | | |
| | Pai bin reing ... ... ... | 23 | 18 | 18 | 11 | | | | |
| | Pah yah myah ... ... ... | 94 | 96 | 67 | 63 | | | | |
| | Tsin Oo... ... ... ... | 7 | 6 | 7 | 6 | | | | |
| | Oke kywet ... ... ... | 42 | 44 | 25 | 33 | | | | |
| | Ran khyouug ... ... ... | 81 | 81 | 60 | 65 | | | | |
| | Ran wah ... ... ... ... | 59 | 48 | 35 | 26 | | | | |
| | Kada wah... ... ... ... | 15 | 11 | 5 | 4 | | | | |
| | Koung kyaw htin ... ... | 32 | 23 | 26 | 22 | | | | |
| | Loo lin byo ... ... ... | 11 | 8 | 4 | 4 | | | | |
| | Myohoung ... ... ... | 79 | 61 | 61 | 42 | | | | |
| | Let ya myan ... ... ... | 10 | 8 | 7 | 6 | | | | |
| | Khyoung Theelah ... ... | 65 | 63 | 39 | 38 | | | | |
| | Thoo gnai daw ... ... ... | 59 | 51 | 59 | 51 | | | | |
| | Pah daw... ... ... ... | 2 | ... | 2 | ... | | | | |
| | Phone Gwai ... ... ... | 73 | 64 | 41 | 46 | | | | |
| | Loung gyet ... ... ... | 20 | 8 | 14 | 4 | | | | |
| | Zee zah... ... ... ... | 33 | 21 | 23 | 16 | | | | |
| | Ashay lai myo ... ... ... | 35 | 23 | 32 | 21 | | | | |
| | Total... | 1067 | 956 | 758 | 695 | 71,82 | 38,915 | 3·7 | |

*Statement shewing the number of persons that died of Cholera during the year 1869, or from January to October 1869—inclusive.*

| Name of Township. | Name of Circles. | No. of persons attacked by Cholera. | | No. of deaths. | | Percentage of deaths amongst those attacked. | Population. | Percentage of deaths to population. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | | | | |
| 5 Kolladan. Composed of 8 Circles. | Poonah Kyon ..... ..... | 28 | 28 | 13 | 14 | | | | This is the most Northerly Township. Out of 8 Circles Cholera prevailed in 2 and the number of deaths reported from January to May 1869, was 25, and the number that died from May to October 1869 was 64. |
| | Kyouk Taw Taik ..... ..... | 13 | 3 | 10 | 6 | | | | |
| | Kalla Anouk ..... ..... | 12 | 7 | 10 | 3 | | | | |
| | Ralla Ashey ..... ..... | 5 | 1 | 2 | 1 | | | | |
| | Pai Kyon ..... ..... | 15 | ... | 4 | 1 | | | | |
| | Than Htoung ..... ..... | 22 | 11 | 12 | 13 | | | | |
| | Total..... | 85 | 50 | 51 | 38 | 65·9 | 15,896 | ·56 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7 Meng Brah. Composed of 19 Circles. | Dine bone ..... | 59 | 26 | 43 | 22 | | | | It is situated on the South-east of the District. Out of 19 Circles Cholera prevailed in 5 during the period extending from January to middle of May, and the number of persons reported to have died was 154, and from May to 17th June 9 persons died; and from this latter date to October inclusive 948 died. |
| | Kyein Ashey ..... | 96 | 113 | 78 | 94 | | | | |
| | Gnazeing ruie ..... | 29 | 43 | 26 | 41 | | | | |
| | Toung Phet ..... | 80 | 138 | 75 | 133 | | | | |
| | Khoung loung ..... | 39 | 39 | 26 | 30 | | | | |
| | Kam Phrai ..... | 56 | 59 | 37 | 40 | | | | |
| | Pyah Khyoung ..... | 2 | 2 | 2 | 2 | | | | |
| | Htin Dine ..... | 13 | 16 | 9 | 15 | | | | |
| | Taw Dan ..... | 14 | 11 | 14 | 11 | | | | |
| | Thin Pagah ..... | 59 | 50 | 43 | 34 | | | | |
| | Kum mee gywai ..... | 14 | 19 | 14 | 9 | | | | |
| | Prwen Rhai ..... | 22 | 24 | 22 | 24 | | | | |
| | Kret Tsin ..... | 12 | 6 | 12 | 6 | | | | |
| | Alai Kyon ..... | 18 | 21 | 18 | 21 | | | | |
| | Khway dek ..... | 65 | 31 | 65 | 31 | | | | |
| | Pha loung breng ..... | 85 | 93 | 47 | 55 | | | | |
| | Let pen dine ..... | 6 | 6 | 6 | 6 | | | | |
| | Total..... | 669 | 697 | 567 | 574 | 81·3 | 35,856 | 3·06 | |

*Statement shewing the number of persons that died of Cholera during the year 1869, or from January to October 1869—inclusive.*

| Name of Township. | Name of Circles. | No. of persons attacked by Cholera. | | No. of deaths. | | Percentage of deaths amongst those attacked. | Population. | Percentage of deaths to population. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | | | | |
| 8 Kyaiklet. Composed of 13 Circles. | Kha Moung khyoung ... ... | 21 | 16 | 9 | 10 | | | | This Township is formed of Circles most of which surround the Akyab Town Circles. During the period extending from January to middle of May 1869, Cholera prevailed in 8 Circles in which 213 persons succumbed to it, and from May to the close of October 204 died. |
| | Kam breng ... ... ... | 13 | 5 | 13 | 5 | | | | |
| | Toung khyoung ... ... | 43 | 38 | 18 | 17 | | | | |
| | Penai khyoung ... ... | 55 | 43 | 39 | 34 | | | | |
| | Kam bine gyee ... ... | 10 | 3 | 10 | 3 | | | | |
| | Mrai ynoo ... ... ... | 53 | 39 | 53 | 39 | | | | |
| | Mubarree ... ... ... | 49 | 35 | 35 | 26 | | | | |
| | Roa Thickay ... ... ... | 23 | 20 | 17 | 13 | | | | |
| | Kyet kine dan ... ... | 39 | 34 | 17 | 22 | | | | |
| | Oung dine ... ... ... | 19 | 25 | 15 | 22 | | | | |
| | Total... | 325 | 258 | 226 | 191 | 71.52 | 21,071 | 2·48 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Naaf ..... | 354 | 287 | 129 | 98 | 35·41 | 35,853 | ·63 |
| Raithaidoung ..... | 2343 | 1837 | 1549 | 1167 | 64·97 | 51,265 | 5·20 |
| Ooreetoung East ..... | 891 | 820 | 588 | 604 | 69·66 | 22,414 | 5·31 |
| Do. West ..... | 2163 | 1958 | 1330 | 1162 | 60·61 | 34,936 | 7·13 |
| Mrohoung ..... | 1067 | 956 | 758 | 695 | 71·82 | 38,915 | 3·7 |
| Kolladan ..... | 85 | 50 | 51 | 38 | 82·60 | 15,896 | ·23 |
| Meng Brah ..... | 669 | 697 | 537 | 574 | 81·3 | 35,856 | 3·09 |
| Kyailet ..... | 325 | 258 | 226 | 191 | 71·52 | 21,071 | 2·48 |
| Total..... | 7897 | 6863 | 5168 | 4529 | 537·62 | 256,206 | 27·14 |

8. Cholera was conveyed from Akyab to Kyouk-Phyoo by boat in the month of March, and from thence to the Island of Cheduba in the same month and by the same means. From this Island it spread back to Ramree and so on throughout the District, terminating according to the Medical Officer of Kyouk-Phyoo, at Aeng in the month of July. The disease also by means of boats was carried to the Sandoway district in the month of August. Here it subsided in September following, but was most probably long anterior to this date conveyed to the Bassein district along the coast route and viâ *Gwa*. The first case recorded in this direction was at Ngatheingyoung in June. In September the disease had reached Pantanau, when heavy rain falling generally throughout the delta of the Irrawaddy put an end to its ravages in this part of British Burma altogether.

Cholera conveyed from Akyab to Kyouk-Phyoo by boat. To the Island of Cheduba by similar means. To Sandoway district ditto, and viâ Coast road to Bassein District by land route. Disease terminated to the south in September.

9. I have marked Mr. Thomas' supposed line of travel in the map by red dots. I cannot say that I quite agree with him however; I believe Cholera had existed in this District as well as in Akyab for a considerable period before it was recognized as an Epidemic outbreak.

Mr Thomas' supposed line of Cholera progress marked from Cheduba to Aeng by a dotted line in Map.

10. A return wave of the first Epidemic as it were, broke out in the Northern portion of the Prome District in the month of May. It now extended to Thayetmyo. On this occasion Her Majesty's 76th Regiment suffered. This recurrent visitation was part of the same Epidemic observed elsewhere, and was probably brought to Thayetmyo from Burma Proper where the disease was still very prevalent. It might have been carried also by the returning traders from Arakan through some of the hill passes. I have entered however in the map two red lines here from the direction of Mandalay, as I cannot help thinking that this was in reality the true direction the disease took.

Second outbreak of Cholera in Prome District. Her Majesty's 76th Regiment suffered. Probable introduction of disease.

11. Any information not given in the map, or in this note, will be found fully detailed under its proper headings in the report itself.

All additional information on the subject of Cholera to be found in the body of the Report.

12. In concluding the subject of Cholera in British Burma during 1869, I would beg to bring to the notice of the Administration, the great pains taken by District and Medical Officers generally to furnish my office with reliable data.

Sanitary Commissioner brings to the notice of the Chief Commissioner the great assistance given him in his work during the year by District and Medical Officers generally.

13. I desire particularly to thank :—

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|---|---|---|---|
| Colonel E. M. Ryan, | Depy. | Commissioner, | Maulmain. |
| „ H. A. Browne, | „ | „ | Prome. |
| Major A. R. McMahon, | „ | „ | Bassein. |
| Capt. Prendergast, Offg. | „ | „ | Akyab. |
| Major W. Munro, | „ | „ | Prome. |
| Captain W. C. Plant, | „ | „ | Myanoung. |
| Mr. C. A. Duke, | Assistant | „ | Nyoungdoon. |
| Mr. St. A. St. John, | „ | „ | Tsanyuay. |
| Mr. J. Treacy, | Deputy | „ | Sandoway. |
| Doctor W. Mountjoy, | Civil Surgeon, | | Akyab, |
| Mr. J. White, | Civil Medical Officer, | | Prome. |
| Mr. Godbier, | Civil Medical Officer, | | Myanoung. |
| Doctor C. W. Foster, | Civil Surgeon, | | Mergui. |

for their labors in collecting facts and other important information in connection with first cases of Cholera, as the disease appeared in or passed through their respective districts.

14. The Cholera maps received from Colonel Ryan, Major Munro, Mr. Treacy, and Dr. Foster have proved of the highest value to me in drawing my own. In fact, I may say that, had it not been for the exertions of these officers, I should have entirely failed myself, to have rendered a Cholera map of any kind this year.

Sanitary Commissioner especially desires to thank Col. Ryan, Major Munro, Mr. Treacy, and Dr. Foster, for their Cholera Maps.

A. J. COWIE,

*Sanitary Commissioner for British Burma.*

RANGOON,
*12th May* 1870.